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U.S. Outsourcing Information Systems Program

Information Systems Outsourcing Competitive Analysis

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INPUT provides planning information, analysis, and recommendations for the information technology industries. Through market research, technology forecasting, and competitive analysis, INPUT supports client management in making informed decisions.

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(SOSOP)

Information Systems Outsourcing Competitive Analysis

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COMPANY PROFILE

Affiliated Computer Systems, Inc. (ACS)

1. Key Systems Operations Contacts

Affiliated Computer Systems (ACS) was formed in 1988 as a holding company. Its first acquisitions were the automatic teller division, the electronic funds transfer subsidiary and the data processing subsidiary of Gibraltar Savings Association. In its first three years, Affiliated acquired twelve related companies and organized them into four operating units: ACS Commercial Services, ACS Financial Services, ACS Compute Utility and ACS Field Electronics. In the last quarter of 1991, Affiliated Computer Services, Inc. (ACS), a wholly owned subsidiary of Affiliated Computer Systems, was formed to consolidate the four units into two operating divisions: Commercial Services and Financial Services. Government accounts are serviced from both divisions, depending on the services required.

The systems operations activities at Affiliated Computer Systems are under the direct supervision of Pete Hill, Executive Vice President—Compute Utilities. He is located at:

2828 North Haskell
P.O. Box 219002
Dallas, TX 75221-9002

2. Description of Principal Business

Affiliated Computer Systems provides computer outsourcing services, facilities management, transaction processing and data communications services. Approximately 95% of ACS revenue is derived from commercial and financial accounts. Revenues for FY 1992 (ended June 30) totaled $180 million, up 9% from the previous year.

The company projects revenues in FY 1993 to reach $220 million. This projection is based on a combination of recently acquired commercial accounts, the acquisition of CIC/DISC, a financial services outsourcing firm, and a recent strategic alliance.

As illustrated in Exhibit ACS-1, the company's primary revenue is derived from its processing operations. Network operations, including shared hub satellite transmission services, will likely remain a significant factor in the ACS service mix.

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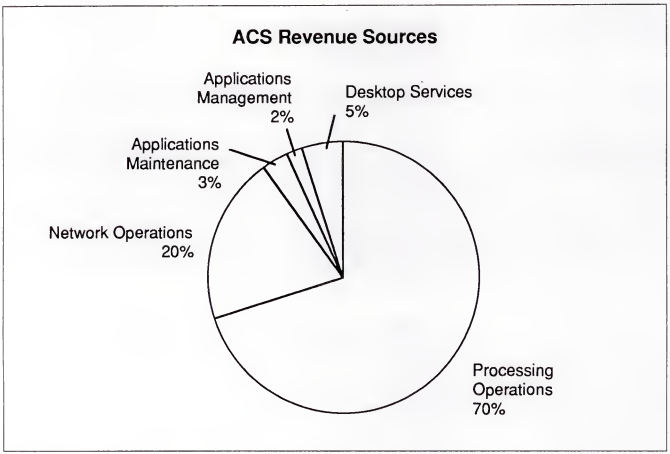
EXHIBIT ACS-1



Staff time and computer utilization account for 75% of the value of ACS outsourcing contracts. Approximately 15% is derived from equipment The remaining 10% stems from systems software.

3. Systems Operations Service Characteristics and Capabilities

Affiliated Computer Services has main computer facilities in six cities: Dallas, San Francisco, New York, Boston, Honolulu and Laurel, MD. It has remote processing locations in twenty states. There are 1,400 full-time employees.

Mainframe processing capacity is 400+ Mips and systemwide disk capacity totals 1,000 Gigabytes.

ACS favors a computing utility, where clients are charged for each unit of computing power consumed, billing each only for what is actually needed. As illustrated in Exhibit ACS-2, the company has progressed in that direction.

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EXHIBIT ACS-2

ACS FY 1992/1993 Contract Method

Fixed Price/Period	Percent	
	FY 1992	FY 1993 (Est.)
Transaction Volume	20	20
Resource Utilization	55	75
Cost+/Predefined Margin	25	5

4. Markets Served

Since the acquisitions in July 1988 of the automatic teller division, the electronic funds transfer subsidiary and the data processing subsidiary of Gibraltar Savings Association, ACS has been a factor in financial services. That traditional position continues. Its three proprietary, financial software products—Hogan, Florida and Advantage Software—provide ACS with a great deal of flexibility in that sector.

An aggressive sales effort over the past 12 to 18 months has added significantly to the company's commercial account list. Already working on a 10-year contract with Southland Corporation (7-Eleven stores), ACS has, over the past six to nine months, posted a number of significant additions.

Greyhound, Inc.: Data processing for corporate administration and fare/scheduling information systems

Associated Stationers, Inc.: Outsourcing and data processing services

Tesseract Corporation: Development and testing resources for the firm's software products in human resource applications

Princeton Packaging: An eight-year outsourcing contract with the nation's largest packaging supplier to the bakery industry

Trans National Communications: Providing call rating and billing, customer service and back-office processing, as well as provisioning and collection services for the firm's flagship product, Member Long Distance Advantage

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5. Competitive Position

Though Affiliated Computer Systems ranks among the top ten firms in the outsourcing industry, it is clearly overshadowed by its major competitor, EDS. ACS is half the size of its next leading competitor, IBM.

In a market where contracts can reach anywhere from $500 million to $2 billion, it is difficult to sell a prospect on the ability to service an account that would literally double or triple the vendor's revenues with a single agreement. ACS has indeed had the experience of bidding on very large contracts and getting through to the final selection process, only to be rejected for just that reason.

On the other hand, ACS is small enough to benefit from account opportunities that might not interest larger competitors. A company the size of EDS, for example, might not be able (or choose) to allocate enough resources, fast enough, to effectively bid on an $8 million contract.

In the $5 to $15 million bid segment, Affiliated has, in fact, done very well. There, ACS is frequently larger and stronger than a host of other competitors attracted to the same range.

With an average contract term in the five- to eight-year range, Affiliated has been bolstering the shorter term contracts it purchased in its aggressive outsourcing company acquisition period, thereby preparing itself to bid on increasingly larger projects.

6. Recent Events

Recent acquisitions and joint ventures include:

In February, ACS announced the acquisition of CIC/DISC, an outsourcing firm based in New York City. The purchase extends Affiliated's financial services presence into the Northeast.

ACS also recently announced that it has entered into a strategic alliance with Price Waterhouse. Both firms see the relationship as synergistic, given the complementary strategic goals. ACS brings compute utility and data processing services to the alliance, while Price Waterhouse provides an extensive background in systems integration. The relationship has already proven itself valuable on several sales and technical levels.

7. Organization

A senior management organization chart is presented in Exhibit ACS-3.

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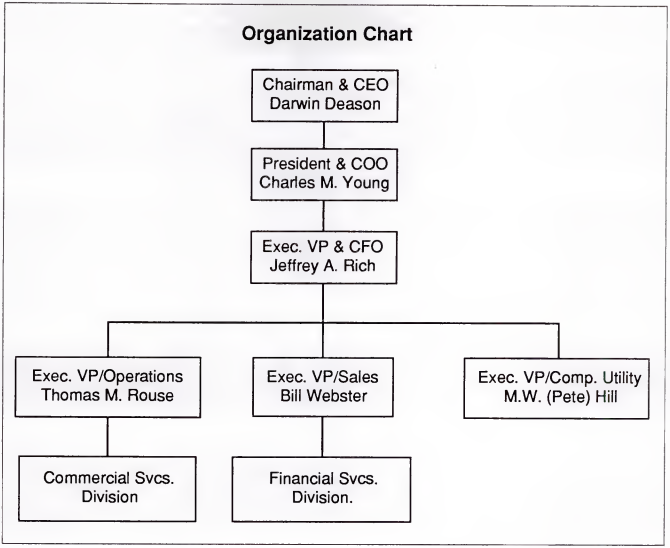
EXHIBIT ACS-3



8. Systems Operations Marketing Strategy

Approximately 80% of ACS's annual outsourcing business comes from its existing client base in the form of contract renewals and expanded services. This may change somewhat as the firm continues to increase its aggressive sales posture. But ACS appears to be working from a generally satisfied base of clients.

Proactive sales activity accounts for 70% of the new accounts that ACS secures. The company targets the business it wants and goes for it. A continuing pattern of targeting both strategic alliances and acquisitions will also account for a significant amount of new account growth in a growing industry, as it allows for expansion of existing client business.

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9. Summary and Future Directions

Just as it quickly stepped outside of its banking industry roots to secure the Southland Corporation account, ACS will continue crossing industry lines in its search for new business. The firm's primary criterion for choosing new business targets is simple: they should be IBM large mainframe users whose core business is stagnant or declining.

Though market saturation does not seem imminent for outsourcing contracts in the U.S., ACS, like many of its competitors, has begun to examine the European market for new opportunities. Opportunities in Europe remain somewhat questionable in this sector, but Affiliated personnel are currently attempting to ask the right questions, while building the appropriate relationships.

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COMPANY PROFILE

Andersen Consulting

1. Key Systems Operations Contracts

The systems operations activities at Andersen Consulting are under the direction of Paul Cosgrave, the Managing Partner for Integration Services and Technology. He reports directly to John T. Kelly, Andersen's Managing Partner, America. Mr. Cosgrave's office is located at:

Champion Plaza
400 Atlantic Street
Stamford, CT 06912

Systems operations are offered through Andersen Consulting's Systems Management service line. Each of Andersen Consulting's service lines is introduced in the following section.

2. Description of Principal Business

Andersen Consulting offers management and technology consulting to clients in nearly every business and governmental sector. The organization helps clients use information technology competitively in all phases of their management activities—strategic, operational, and financial. Andersen Consulting believes it can ultimately help its clients "reengineer" or rethink the way they do business—a process, the firm claims, that can lead to business integration, or the integration of technology, strategy, operations, and people.

Andersen Consulting breaks out its services through these service lines:

- Systems (operations) Management (operations and network services, facilities management, applications management, backup/recovery services)
- Systems Integration (systems design, building, integration, implementation
- Strategic Services (competitive and market strategy, organization and change strategy, business operations strategy, information and technology strategy)
- Change Management Services (organization change, technology assimilation, knowledge transfer, quality management)

Andersen Consulting also offers application products and computer-aided software engineering products.

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Andersen Consulting's services (including systems operations) and products are offered through six major industry practices. Each of the following practices is headed by a managing partner and staffed with consulting specialists who have developed industry-specific expertise:

- Financial Services (financial markets, insurance, retail financial services)
- Government
- Heath Care
- Products (aerospace and defense, airlines, discrete/repetitive manufacturing, energy, food/consumer packaged goods, general retail and wholesale distribution, process manufacturing)
- Telecom industry group
- Utilities

Those classifications are not specialties but ways of organizing Andersen Consulting's varied industry work.

Andersen Consulting is no longer the consulting arm of tax/audit firm Arthur Andersen. In 1989 the two Andersens were designated as separate business units with their own operations and managing partners. Through this operating model, none of the partners in Andersen Consulting is active in Arthur Andersen and vice versa. Andersen Consulting's managing partner is George T. Shaheen.

3. Systems Operations Service Characteristics and Capabilities

Exhibit AC-1 compares the distribution of systems operations contracts under various pricing alternatives. Andersen expects some interesting changes in the next few years. Its share of fixed-price contracts will double, possibly as a result of the expected increase in client-owned equipment and sites. Charges, based on resource utilization, will decrease, at least as a percentage of overall business. Andersen will also begin doing some changing based on transaction volumes. INPUT believes that, in an absolute sense, charges based on resource utilization will not actually decrease. Rather, its growth rate will lag behind other parts of Andersen's systems operations business.

INPUT asked Andersen to characterize the duration of its contracts. The results showed a somewhat atypical dominance of the very long-term projects:

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EXHIBIT AC-1

Distribution of Contracts

Contract Type	Percent	
	1989	1992
Fixed price	20	40
Transaction volume	20	8
Resource utilization	0	40

- 3 to 4 years 10%
- 5 to 8 years 15%
- More than 8 years 75%

This long-term situation provides Andersen with a stable backlog of work on which to build.

Exhibit AC-2 compares systems operations capabilities internal to Andersen with those acquired through alliances. Unlike most other vendors studied by INPUT, Andersen does not overlap any internal capabilities with outside assistance. It relies on teaming partners only for disaster recovery services, network operations, and certain specializing in each of these two disciplines, and each discipline depends highly on advanced technology for cost-effective solutions.

4. Markets Served

Andersen currently provides systems operations support to approximately 80 commercial customers worldwide, with an average contract value in excess of $20-$25 million. Currently, Andersen derives no systems operations revenues from federal clients. The low profit margins and highly competitive nature of federal systems operations business may be discouraging Andersen from pursuing it. However, given the breadth of Andersen's other federal business, Andersen will likely begin providing systems operations to federal agencies.

Andersen has targeted the following vertical industries for specialization:

- Financial Services
- Utilities

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EXHIBIT AC-2

Capabilities

Internal alliances	None
Internal only	Business consulting Computer systems operations Network management Applications design/development Applications maintenance Package applications software Equipment maintenance
Alliance only	Disaster recovery service Network operations
Neither internal nor alliance	None

- Products (including energy)
- Manufacturing and Consumer Products
- Health Care
- Telecommunications
- Government

5. Competitive Position

While the firm began to formally market its SM services as a separate practice in 1988, it has provided clients with systems operations services for over a decade. This contrasts with some other firms which INPUT has investigated, which have been providing systems operations support for nearly thirty years. As previously indicated, Andersen has not yet entered the federal systems operations market.

It is interesting to compare Andersen with its two leading rivals, IBM and EDS. Each brings a different set of credentials to the market:

- Andersen has extensive industry-specific systems development and integration experience, helping it to understand its clients' needs.

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- IBM provides unparalleled hardware and software experience, possessing a greater understanding of the technology's potential than either of the other two.

- EDS has dramatically more systems operations experience, network management experience, than its two prime competitors combined.

It will be interesting to see how this rivalry plays out over the next few years.

6. Recent Events

Andersen has formed a strategic outsourcing alliance with INFONET Services Corporation. The non-exclusive alliance enhances both firms' capabilities to offer communications, computing services, application support, and business operations expertise to meet specific customer needs. The alliance enables Andersen to offer INFONET's global communications network on a preferred basis, which will be very important to its SO capabilities.

In September, Andersen Consulting and Systematics Financial Services, Inc. formed a strategic business alliance to provide systems integration services and banking software to the nation's financial institutions. The alliance will provide financial institutions a full range of integrated information services, including systems integration, remote processing, facilities management, application software and other management information services. This is an exclusive arrangement, but both parties are free to honor specific client requests for alternatives.

7. Organization

As previously indicated, Andersen Consulting provides systems operations support through one of its service lines. It has been estimated that Andersen Consulting derived $2.26 billion of revenue from consulting services during FY91. Although systems operations represents a very small fraction of this business, INPUT expects it to take a steadily larger share, as it has become a strategic offering for Andersen.

Currently, Andersen has approximately 235 people dedicated to systems operations activities. As previously indicated, INPUT expects this to grow considerable. The bulk of this staff is engaged in five areas:

- Systems Operations 40%
- Technical Support 14%
- User Support 14%

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- General Administration 10%
- Applications Design and Development 10%

Andersen also has limited staff dedicated to other areas.

8. Systems Operations Alliances

Except for the INFONET and the Systematics relationships discussed earlier, Andersen has few formal alliance programs for systems operations. It uses INFONET primarily for telecommunications backup and support. It has also established an arrangement with IBM and Sunguard for disaster recovery. As earlier indicated in Section 3, Andersen prefers to build internal systems operations capabilities whenever possible.

9. Systems Operations Marketing Strategy

Andersen expects to expand its systems operations business from both its existing client base as well as through new accounts. It has identified various selection criteria for pursuing new business:

- It is not cost effective for Andersen to pursue small systems operations opportunities. Therefore, it generally pursues only those contracts with a minimum revenue stream of $3 million/year.
- Andersen currently plans to stay with the equipment it already knows. Therefore, it usually limits itself to systems operations projects involving IBM, Amdahl, and/or DEC equipment.
- Andersen also prefers to focus on technology-intensive industries and clients, since this is where it believes it can expect a competitive edge.
- Finally, it will focus on those opportunities where it can demonstrate a real business benefit to the client.

Andersen anticipates that a major portion of its ongoing systems operations business will be the result of existing client relationships. Andersen's strategy will be to leverage its extensive experience in other areas to grow its systems operations business. Andersen has estimated that its new contracts will come from the following sources:

- Responding to bid solicitations or RFPs 25%
- New contracts with existing clients 35%
- Proactive direct sales activity 40%

In competing for systems operations, Andersen identifies the following key factors, some of which differentiate it from its competitors:

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- Access to flexible, high-performance operations
- Client service
- Well defined methodology
- Business integration approach
- Flexibility
- Leading edge technical expertise
- Cost-effective processing
- Application of business/technical expertise
- Full range of services offered, including applications development and planning
- Sensitivity to client relationships
- Independence of particular hardware or software solutions

10. Systems Operations Customer Base

Andersen currently has approximately 33 commercial clients in North America, and approximately 80 commercial clients worldwide. As previously indicated, Andersen has no federal clients for systems operations services. The following are typical of Andersen's engagements:

- At Sun Refining and Marketing, Inc., Andersen has responsibility for computer center operations, systems software maintenance, and telecommunications management.
- At Maxus Energy Corporation, Andersen has an agreement, being responsible for the management and operation of data processing, telecommunications, and applications development.
- Volunteer Hospitals of America depends on Andersen Consulting for all systems operations and applications software and development, building on the vendor's prior reputation in the health services industry.

At BP Exploration in the U.K., Andersen has assumed total responsibility for the accounting function, including the acquisition and management of the clerical staff.

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11. Summary and Future Directions

In responding to INPUT's survey, Andersen estimated that the commercial systems operations business is growing 30% annually, while the federal business is growing only at 15%. Andersen also believes that operating margins are increasing for commercial work, while remaining fairly flat for federal work. This explains Andersen's decision to focus on the commercial market for systems operations. Andersen has experienced some start-up costs associated with entering this business, and , therefore, has not yet achieved acceptable profit margins. However, as its systems operations business matures, margins will likely improve.

Andersen is investing to become a major player in this market. INPUT, therefore, expects it to grow faster than the overall market, and, subsequently, expand into other vertical industries. Essentially, any area in which it has consulting expertise will become a target of its systems operations efforts.

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COMPANY PROFILE

Citicorp Information Resources (Now part of FIserv Inc.)

1. Key Systems Operations Contacts

On April 1, 1991, FIserv Inc. of Milwaukee acquired the processing and consulting units of Citicorp Information Resources (CIR), the systems operations subsidiary of Citicorp, Inc. FIserv plans to operate CIR as a subsidiary of FIserv and is expected to shift its facilities management, outsourcing and Resolution Trust operations into the former Citicorp unit. Since the systems operations activities of the combined firms are expected to be managed by the CIR subsidiary, this profile concentrates on the CIR portion of FIserv's operations.

The systems operations activities at Citicorp Information Resources (CIR) are under the direction of Frank Martire, Chairman of CIR, who reports to Mr. George Dalton, Chairman of Fiserve. Mr. Martire is located at:

4 Stamford Forum
Stamford, CT 06901

2. Description of Principal Business

Citicorp Information Resources provides processing services, application software products, systems operations (facilities management), and associated support services to over 800 banks, thrifts (savings and loans, savings institutions, and mutual savings banks), finance companies, and credit unions.

CIR is a national supplier of information services in 43 states and in 24 countries around the world. CIR provides the following products and services to financial institutions:

- The National Service Product (NSP) is an on-line processing service for banks and thrifts.
- Resource Manager is a systems operations processing service that provides access to third-party software from a CIR data center.
- The Comprehensive Banking System is available as a software product or a turnkey system to banks and thrifts.
- Systems operations professional services are provided to banks and thrifts.
- The GALAXY 2000 Credit Union System is available as an on-line processing service, in-house software product, or systems operations professional service. Because GALAXY 2000 is vertically integrated software, all three delivery modes use the same software.

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- EFT Services support a range of ATM transaction processing capabilities, including ATM driving, transaction switching, and point-of-sale support.

- CIR also provides consulting services to international financial institutions.

3. Systems Operations Service Characteristics and Capabilities

Exhibit CIR-1 presents CIR's view of the changes in its market over the next few years. All of the numbers represent a percentage of total revenue derived from systems operations. The first chart pairing indicates that there will be no change expected in the next few years in the percentage of revenues generated from client-owned equipment. The high percentage of vendor equipment is consistent with most responses to INPUT's survey. In general, most systems operations vendors derive greater revenues through their own equipment than through client-owned equipment.

The second pairing in Exhibit CIR-1 shows that all systems operations revenues are realized from client-owned sites. This suggests that, as CIR increases its systems operations business, it will continue to purchase equipment for installation at client sites.

CIR-1

Market Characteristics

		1989 (Percent)	1992 (Percent)
Equipment Ownership	CIR	80	80
Percent of Revenue	Client	20	20
Equipment Location	CIR	0	0
Percent of Revenue	Client	100	100
Processing	Shared	0	0
Percent of Revenue	Dedicated	100	100
Applications Software			
Developed by	Client	10	10
	CIR	10	10
	Third Party	80	80

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The third pairing shows no expected change in the mix of shared versus dedicated facilities. In the nine data centers that CIR operates, each center is client owned, and therefore dedicated to the single client.

The fourth pairing shows that while most application software is developed by third-party vendors, an equal percentage of revenues are realized when application software is developed by either CIR or the client.

All of CIR's contracts are fixed-price contracts for a fixed period, each greater than five years in duration.

Citicorp Information Resources has the necessary capabilities to provide full service to its client banks, except in the areas of disaster recovery and equipment maintenance. In those areas, other companies are brought in to perform such functions. CIR has established an alliance with Sorbus to provide equipment maintenance.

In addition, CIR supplements its capabilities in the areas of software development and maintenance with the services of outside vendors. These vendors may provide custom services or packaged applications. Particular examples are the use of McCormack and Dodge and Hogan packaged software for financial institutions.

4. Markets Served

CIR provides its systems operations services only to financial institutions. It currently has nine banking customers to whom it provides a full range of processing and systems operations services.

5. Competitive Position

The company has been in the systems operations business for seven years. It had systems operations revenues of $15 million in 1989 and projects 1990 revenues from systems operations of more than $21 million. The 1989 revenue for all of CIR was $120 million.

CIR considers its principal competitors to be two companies that concentrate their energies on the banking sector—Systematics and Mellon Bank—and one broad-based SO provider—EDS.

6. Recent Events

In May 1989, CIR introduced Selector, a software package that permits National Service Products (NSP) customers to retrieve data from mainframe files resident at the CIR data center for manipulation on their microcomputers. Selector is available only to NSP clients.

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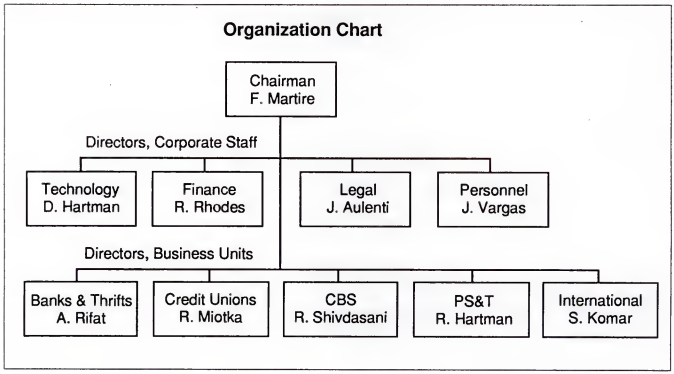
In April 1989, CIR introduced EFT Services, an integrated ATM service available from its Arlington Heights data center. ATM processing support was previously provided to CIR's NSP clients by GTE-Indianapolis and Deluxe Data Services.

7. Organization

Citicorp Information Resources is a subsidiary of Citicorp, which provides banking services to the financial community.

Exhibit CIR-2 presents the organizational structure of CIR. Though CIR does not identify its staff as dedicated to systems operations, there are approximately 900 employees. Exhibit CIR-3 shows an approximate distribution of these employees by function. As expected for a service provider, the largest concentration of resources is in the operations function (45%).

CIR-2



8. Systems Operations Alliances

CIR has no formal alliance program to enhance its capabilities, but does use subcontractors to supplement its resources in the areas of applications software development and maintenance.

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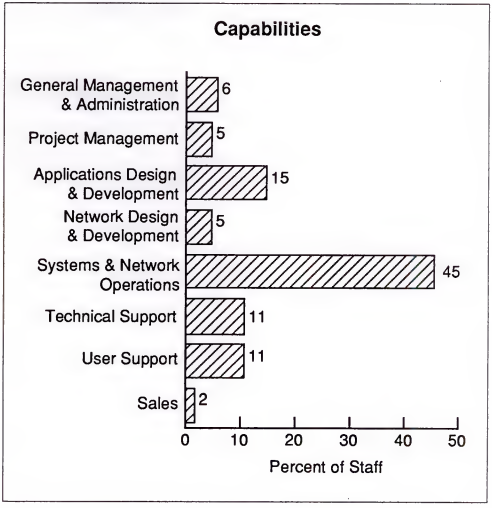
9. Systems Operations Marketing Strategy

Citicorp Information Resources expects to continue to grow by expanding its current base of clients. Management considers the needs of the prospect and the cost of entry of servicing that client in deciding which prospects to target.

For example, if a prospect is currently on a processing platform not supported by CIR, the cost of entry for that customer would probably make it an unlikely client. Another factor cited by management is the strength of competition in a particular geographic market. CIR will concentrate its efforts in areas where its perceived competitors do not already have a dominant position.

CIR-3



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Currently, CIR derives 85% of its systems operations revenue from the current client base and expects to generate about 15% of that from new accounts. About 80% of these new sources of systems operations revenue are generated from within the current customer base, with 20% acquired in response to bid solicitations.

CIR provides its new clients with additional flexibility in its systems operations and can usually provide the service at a lower price than other vendors and internal resources.

10. Systems Operations Customer Base

Citicorp Information Resources currently has nine clients. Typical of those are Amarillo National Bank in Texas; First Guaranty Bank in Hammond, Louisiana; and Pacific Guaranty Bank in San Jose, California. In all of these instances, CIR manages the entire data center operation.

11. Summary and Future Direction

Citicorp Information Resources has successfully assumed the systems operations functions of a number of banks to fulfill all of their data processing needs. The sales force expects to continue its market expansion by seeking new clients in the banking community. Management is relying on its expertise, its reputation in the market, and current contacts for major new clients.

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COMPANY PROFILE

Computer Task Group, Inc.

1. Key Systems Operations Contacts

The systems operations activities of Computer Task Group are under the direction of John A. Lozan, a corporate Vice President. He reports directly to John P. Courtney, President of the corporation.

The executive offices of the company are located at:

800 Delaware Avenue
Buffalo, NY 14209
(716) 882-8000

However, Mr. Lozan's office is located at:

700 Delaware Avenue
Buffalo, NY 14209
(716) 881-3000

2. Description of Principal Business

Currently, systems operations is a major new emphasis area for CTG. Approximately 87% ($203 million) of CTG's revenue was derived from its various professional services, including systems operations, and 13% ($30 million) from commercial systems integration activities.

CTG classifies its services into three areas:

- Professional services—the company's major source of revenue is derived from this type of service. CTG staff provide programming, systems analysis and design, project management, systems operations, and other services in support of the client's data processing applications.

- Consulting—examples of specialty areas in which CTG has experience include information engineering, data base consulting, telecommunications/network consulting, conversions, migration, and document management services.

- Commercial systems integration services—these services are provided to the manufacturing and industrial markets through CTG's subsidiary, Scientific Systems Services. Services provided include management consulting; concept and applications planning studies; control-Spec™ functional specification and scope-of-work contracts; systems architecture services, including hardware selection, systems software evaluation and selection, application software, and communications; and project implementation.

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CTG provides its commercial professional services through a network of 65 branches and field offices.

Currently, systems operations represents approximately 5% of CTG's sales. It is offered on a nationwide basis. A significant number of CTG's systems operations contracts are in partnership with IBM.

3. Systems Operations Service Characteristics and Capabilities

Exhibit CTG-1 presents graphically how CTG views the change in its market in the next four years. All of the numbers represent a percentage of total revenue derived from systems operations. The first chart pairing indicates that there will be significant change in the next few years in the percentage of equipment that is client owned. CTG expects client-owned equipment contracts to continue to be a very minor portion of its overall systems operations activities. The majority of activity will be third-party ownership. This indicates CTG's change in strategy from a service bureau orientation.

However, the second pairing suggests the opposite result for equipment locations, as equipment at client sites will shrink from 63% in 1989 to 50% in 1992. This suggests that, as CTG increases its systems operations business, clients will find it more economical to utilize shared sites.

On the other hand, CTG expects some change in the mix of shared versus dedicated facilities. This suggests that, as CTG or third parties convert ownership of client equipment, it will begin using that equipment for other clients. The three pairings of boxes, taken together, suggest some significant changes in the way CTG will conduct its systems operations business. However, since it currently supports only three centers, some changes would be expected as the business grows. Currently, all of CTG's systems operations activities involve client-developed applications software. However, as the fourth pairing in Exhibit CTG-1 shows, this will change slightly over the next few years. In view of its significant professional services activities, CTG does plan to leverage more of its software development efforts into systems operations.

Exhibit CTG-2 compares the distribution of systems operations revenue under various pricing alternatives. The data suggests some dramatic changes in the way CTG will conduct its systems operations business. In particular, by going to fixed-price work, CTG will be assuming considerably higher risks in the performance of its contracts. It is possible, as CTG builds up a critical mass of staff expertise in systems operations, that this risk will become manageable and fully justified by the potentially higher profit margins.

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CTG-1

Market Characteristics

		1989 (Percent)	1992 (Percent)
Equipment Ownership Percent of Revenue	CTG	91	10
	Client	0	10
	Third Party	9	80
Equipment Location Percent of Revenue	CTG/IBM	37	10
	Client	63	50
	Third Party		40
Processing Percent of Revenue	Shared	90	60
	Dedicated	10	40
Applications Software Developed by	Client	100	60
	CTG		20
	Third Party		20

CTG-2

Distribution of Revenue

Contract Type	1989 (Percent)	1992 (Percent)
Fixed Price	9	80
Resource Utilization	91	
Cost plus Predefined Margin		20

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Currently, CTG's systems operations contracts range from three to four years for half the work to more than eight years for the other half. Currently, CTG derives none of its systems operations revenue from the federal government.

Exhibit CTG-3 compares systems operations capabilities derived from internal sources with those derived from alliances. The data suggests that CTG has made significant teaming efforts in its systems operations activities. Since IBM currently has an equity investment in CTG, IBM will likely continue to provide the system software, the maintenance arrangements and the hardware platforms.

CTG-3

Capabilities

Internal and Alliances	• Business Consulting • Computer Systems Operations • Network Management
Internal Only	• Network Management • Applications Design/Development • Applications Maintenance
Alliance Only	• Equipment Maintenance • Disaster Recovery Service • Packaged Applications Software
Neither Internal nor Alliance	• Packaged Applications Software

On another issue, CTG is heavily involved in unique consulting and use of systems integration skills, including communications, imaging, documentation, conversion technology, and data base architecture, which give it a competitive advantage. Business growth will likely come from expansion of its professional services business and the above specialties with existing clients. Since this portion of CTG's business is so large, there will be a sufficient number of current clients to increase market penetration.

4. Markets Served

As previously indicated, CTG is just getting started in the systems operations business. It currently services several commercial clients and no federal clients. At this point, CTG appears to be focused on the financial and manufacturing industries.

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5. Competitive Position

The company has been providing systems operations support for the past five years, exclusively in the commercial area. This business has grown from $4.89 million in 1988 to $6.72 million in 1989. As CTG grows its systems operations business, it expects its primary competition to come from the large, established firms, including EDS, Andersen Consulting, and Perot Systems.

6. Recent Events

CTG has recently been active in mergers and acquisitions. First, it acquired Connolly Data Systems, Inc., a Lowell, Massachusetts firm that specializes in networking systems integration. In its five-year plan, CTG had targeted networking, communications, and connectivity as areas of high growth. Therefore, the acquisition of Connolly fits well with CTG's strategic commitment.

In another action, World Software Group, a privately held Dutch company, increased its equity stake in CTG to 14.66% of outstanding common shares. World Software Group invests primarily in computer software firms, so CTG's position represents a slight departure from past trends.

Finally, CTG acquired the Rendeck International Group of companies. Rendeck will act as CTG's new European division. Rendeck, with 360 European employees and 1989 revenues of $24 million, provides consulting, professional services, training, and mainframe systems software.

7. Organization

CTG is organized around its three main business areas, as described in Section 2 above. In addition to a limited headquarters staff, CTG currently operates 60 offices.

During the second quarter of 1989, CTG closed four unprofitable branches and eliminated 65 overhead positions to save over $1 million. Results of operations for the second and third quarters were lower than expected, at which time the company announced it would undertake a major restructuring program.

- Overall during the year, CTG eliminated more than 300 positions through the consolidation of overhead functions and the sale or closing of branches. The company consolidated its field operations from 71 to 60 offices.

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- The restructuring program resulted in charges to 1989 earnings of $4.2 million for losses on the closing of business units and $13.2 million for other restructuring expenses.

  - Included in the losses on closed business units were losses resulting from the sale of CTG's Amtec Systems Corporation subsidiary and the Ottawa, Ontario, branch office.

  - Other restructuring expenses included severances, costs related to streamlining administrative programs and benefit plans, and costs for consolidating business operations.

- As a result of the restructuring, CTG's first three quarters of 1990 provided record growth in profit, not including expansion into Europe during this period.

8. Systems Operations Alliances

CTG indicated to INPUT that it currently has a systems operations alliance with IBM. In June 1989, IBM made an equity investment in CTG, acquiring approximately 1.5 million shares of CTG preferred stock for $21 million.

- In conjunction with this transaction, the two companies agreed to levels of use of CTG's systems engineers on products for IBM and its customers. Some of these resources are being applied to some of IBM's large SO contracts, like Kodak and Bank South.

- Revenues from IBM, which were about 5% of total revenue prior to this contract, increased approximately 50% by the end of 1989.

INPUT believes that, as CTG increases its systems operations activities, this IBM relationship will continue to play an important role.

9. Systems Operations Marketing Strategy

As previously indicated, CTG plans to expand its systems operations business among its professional services clients. In addition, it will likely enter new markets. However, this latter thrust is expected to account for only 10% of its new business. The balance will come from existing customers. As of this writing, CTG plans no penetration of the federal market.

CTG expects to receive approximately 20% of its new systems operations business through formal solicitation. The balance of new business will come from direct sales activity. This is consistent with its overall plans to expand the contracted work with its current client base.

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10. Systems Operations Customer Base

As indicated earlier, CTG has not yet developed systems operations into a major line of business. In 1989, systems operations revenues represented less than 3% of the firm's overall revenues. Its two current clients, IBM and USS/POSCO Industries, represent too small a sample from which to draw any conclusions. However, as the business grows, CTG may choose to focus on certain vertical markets.

11. Summary and Future Directions

In responding to INPUT's survey, CTG estimated that the systems operations market would grow at a 28% CAGR over the next five years, with margins increasing. Since CTG also views systems operations as a highly profitable business, INPUT expects it to increase both sales and marketing efforts in the near term. CTG sees the market segmenting into a number of solutions based on system size. In the large mainframe opportunities, it plans to partner with IBM as the staff provider. In smaller situations, it will provide complete services. CTG will also probably take advantage of its IBM relationship to reach new clients, while at the same time increasing penetration of its own client base.

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COMPANY PROFILE

Digital Equipment Corporation (DEC)

1. Key Systems Operations Contracts

The systems operations activities at Digital Equipment Corporation (DEC) are under the direct supervision of Russ Gullotti, Vice President of Digital Services International, located at:

40 Old Bolton Road
Stowe, MA 01775

2. Description of Principal Business

Digital Equipment Corporation, founded in 1957, is one of the world's largest suppliers of networked computer systems, software, and services, and is a leader in multivendor systems integration. As an international company, Digital does more than half its business outside the United States, developing and manufacturing products for customers worldwide.

DEC currently has more than 124,000 employees and more than 300 clients in the Americas, Europe, and the Pacific Rim.

3. Systems Operations Service Characteristics and Capabilities

Digital views services as vital to its future as a corporation. In March 1991, DEC combined its Systems Operations Group, Customer Services Group (CSG), Systems Integration Group, and Enterprise Integration Services (EIS), to form Digital Services.

In regard to its operations contracts, DEC distinguishes facilities management and systems operations as two separate entities. According to Digital, facilities management is the *total* or complete transfer of management responsibility from client to contractor. Systems operations is defined as the management of one function or multiple areas, only where it would best benefit the client. This is also called *modular outsourcing*.

Of its facilities management contracts, Digital reports that 50% of the data centers are client owned, while in its systems operations business 90% of the data centers run are client owned.

Approximately 50% of Digital's contracts are for a period of three to four years, with 20% lasting from one to two years and 30% from five to eight years. Exhibit DEC-1 describes DEC's 1990 and estimated 1993 contract pricing alternatives.

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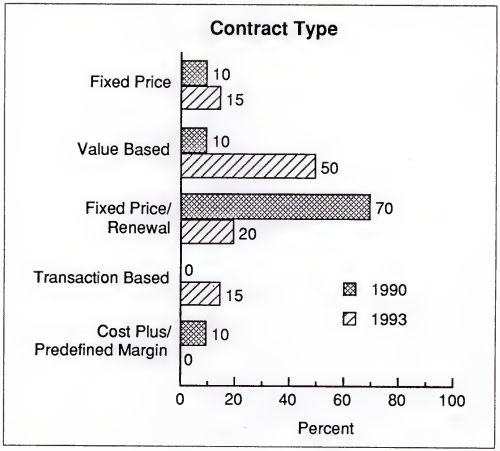
Note that DEC identifies several distinct types of contracts. It has no transaction-based contracts currently but expects them to become 15% of the contract mix by 1993. On the other hand, cost plus fixed margin contracts do not represent a large portion of the contract mix and will become insignificant by 1993.

There are three types of contracts that DEC considers fixed price contracts. Standard fixed price contracts (the client pays a fixed fee for services on a monthly basis) represent a small portion of the contract mix and are not expected to grow much. Fixed price/renewal is a similar type of contract but includes options for renewal in the existing contract. A typical scenario is that the contract would be for three years with two one-year renewal options built in for a total contract duration of five years before renegotiation is required. Though this represents a large percentage of the current DEC contracts, it is expected that these will give way to the value-based contract by 1993. DEC defines the value-based contract as one in which the contract price is a function of the total value of the service, a customized price that includes elements specific to each client. It does not derive its elements from a price list or off-the-shelf features, but is a function of the total service provided to the client.

EXHIBIT DEC-1



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4. Markets Served

While placing much emphasis on expansion into new markets, DEC also focuses on expansion within current functional and vertical markets such as manufacturing, finance, government and telecommunications/utilities. Its functional markets include office automation, manufacturing resources planning (MRP) integration, and application development.

5. Competitive Position

DEC has provided operations management services to its federal and commercial clients for approximately four years.

Ranked in the top ten global information technology suppliers in 1990, DEC saw only a 1% revenue increase from $12.93 billion in 1989 to $13.07 billion in 1990. All growth came from outside the U.S.

However, in FY 1991 the company's revenue for services rose 17% to $5.6 billion, while product revenues grew only 2%. The company estimates its compound annual growth rate (CAGR) over the next five years at 25%. INPUT believes that this growth is due to company and marketing reorganization.

Exhibit DEC-2 lists Digital's primary competitors in both the federal and commercial markets.

EXHIBIT DEC-2

Primary Competitors
Federal/Commercial Markets

- EDS
- IBM
- ISM - Canada
- Andersen Consulting

Approximately 50% of DEC's annual systems operations business comes from new accounts. The company places emphasis on global service delivery capacity, technical expertise and skills, multivendor and open systems capabilities, integration, and corporate commitment to partnerships.

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While Digital Services relies on the U.S. market for the bulk of its revenue, Japan is its fastest growing market, especially in manufacturing and financial services.

Because of its experience with a large hardware and services business base, DEC frequently has the opportunity to propose custom outsourcing solutions to its clients. Once a relationship has been established, future sales are easier to obtain and emphasis is placed on the relationship rather than the cost.

Approximately 50% of DEC's new contracts result from deals with existing clients. Response to Request For Proposals (RFPs) account for 30%, and 20% is attributable to direct sales activity.

6. Recent Events

- Eastman Kodak, 1989—Under this five-year agreement, DEC is responsible for the management of Kodak's worldwide telecommunications network. DEC manages Kodak's voice, data, and text communications, which link over 145,000 employees worldwide. As part of the agreement, Digital hired over 200 of Kodak's employees and acquired the company's telecommunications resources. The agreement requires integration of services and equipment from AT&T, IBM, U.S. Sprint, and the Rochester telephone company. This is one of DEC's largest systems operations projects.

- Imperial Oil Ltd.—In July 1991, Imperial Oil Ltd., a $7 billion subsidiary of Exxon, entered into an extensive outsourcing pact with DEC. The contract covers all aspects of Imperial's information systems from mainframes to microcomputers. Under this agreement, DEC is responsible for management of the desktop services, and Imperial's communications needs.

- Earle M. Jorgenson—In August 1991, DEC entered into a $16 million outsourcing contract with the Earle M. Jorgenson Company. Under this agreement, DEC will provide systems management and plans to port Jorgenson's diversified applications to DEC VAX 9000 mainframes. DEC, the prime contractor, is working with Distribution Architects, Inc. of Tempe, AZ, which will supply transaction processing, applications and data base software.

7. Organization

Systems operations activities are handled by Digital Services, which is also responsible for the SI activities. Digital Services is organized as illustrated in Exhibit DEC-3.

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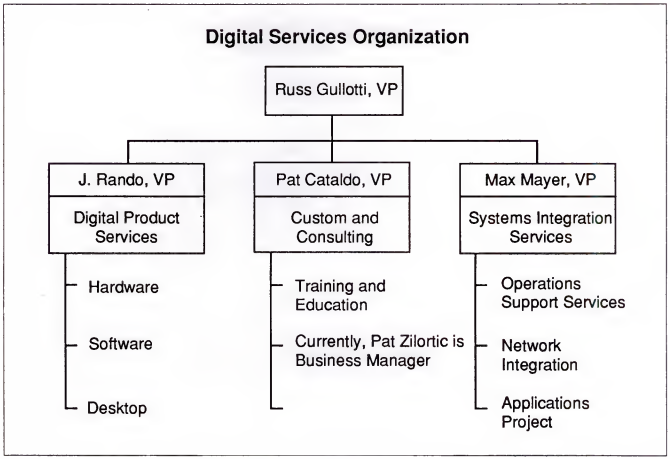
Digital places great emphasis on the education and training of its employees. DEC's focus on education support began in 1962 and in 1990 its operations had grown into a worldwide training network comparable in size to a university with a student population of more than 26,700.

EXHIBIT DEC-3



8. Systems Operations Alliances

Many of DEC's alliances are formed for SI purposes, as well as other reasons, and evolve into SO relationships. The capabilities of the DEC staff are distributed within the organization, as illustrated in Exhibit DEC-4.

DEC uses alliances to support its SO business through subcontract relationships, prime relationships, consortiums, and general partnerships which will bring new skills and strengthen its market presence. The company's systems operations, as well as system integration, relationships include Andersen Consulting for logistics packages, Price Waterhouse for EDI, and CSC for telecommunications software.

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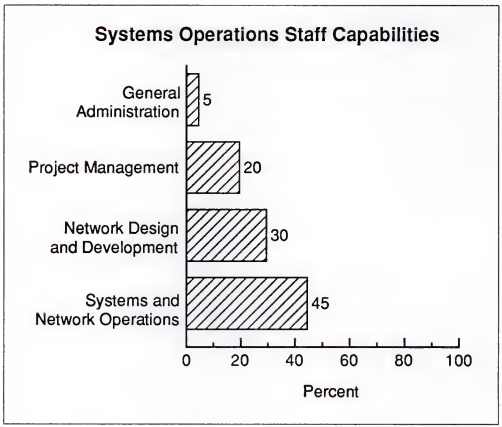
EXHIBIT DEC-4



The company currently uses alliances to provide services such as business consulting, computer systems operations, network management, applications design/development, applications maintenance, packaged applications software, disaster recovery services, and equipment maintenance.

DEC offers modular outsourcing services to strengthen its alliances with customers by placing emphasis on allowing users to augment their internal capabilities without increasing staff or deflecting key personnel from their core business.

9. Systems Operations Marketing Strategy

DEC believes cost containment and control, market and competitive advantage, focus on core business, and access to technical talent and skills will place the company in a strategic position to meet its growth expectations.

10. Systems Operations Customer Base

Digital has experienced the most success in areas such as manufacturing—particularly aerospace—automotive, utilities, and telecommunications.

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Blockbuster Video—As of 1988, a well-known retailer had opened more than 1,200 stores over a period of five years. With a 350% rate of expansion, Blockbuster had established itself as one of the fastest growing companies in the U.S. When the retailer decided to go international, it formed an alliance with Digital. This alliance established DEC as the single source of support for the opening of each new international store. The company also created specifications for system hardware and software to support a help desk function. At contract end, Digital had garnered over $6 million in revenue.

1990/U.S. Census Bureau—DEC was selected to provide hardware, complete automation, and networking of all Census records. Under this $80 million contract, the company performs all data collection and analysis, and is responsible for the monitoring of assembly, delivery, and installation processes.

Alcoa Aluminum—In October 1989, Digital won an $11 million contract for hardware and desktop services to the Alcoa Technical Center in Pittsburgh, PA. Under this contract, Digital will provide vendor management and service delivery for all hardware and software at the Center. The company will act as a single point of contact for all computer support resources in a multivendor environment. Digital is also responsible for creating a response center to provide service call handling, tracking, and delivery notification.

11. Summary and Future Directions

Digital has considered outsourcing a small subset of its Digital Services revenue base. It will expand as the market changes to include services that Digital performs well—namely desktop services, network management and applications management. As the company refines its service orientation and lessens its emphasis on hardware, Digital has the resources to redeploy effectively into the outsourcing arena. There are strong signs that this is indeed in process.

Digital is currently redirecting its marketing forces to pursue outsourcing opportunities more aggressively. Known to have an effective internal training program, the company should be able to realign into marketing efforts completely in 1992 and begin gaining more outsourcing revenue to lessen its dependence on hardware.

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COMPANY PROFILE

Electronic Data Systems (EDS)

1. Key Systems Operations Contacts

The systems operations activities at Electronic Data Systems (EDS) are under the direct supervision of Jeff Heller, Senior Vice President. He is located at:

7171 Forest Lane
Dallas, Texas 75230

2. Description of Principal Business

Electronic Data Systems Corporation, founded in 1962, is a leading information and communications services company providing information processing, consulting, systems management, systems integration, and communications services to the financial, insurance, commercial, and communications industries domestically and internationally, and to state and federal government. These markets include banking; credit unions; property; life, health, and casualty insurance; distribution; manufacturing; transportation; retail; and energy.

- EDS currently has more than 60,000 employees and more than 7,000 clients in all 50 states and in 27 other countries worldwide.
- EDS' largest clients are General Motors Corporation (GM) and its subsidiaries, which contributed approximately 55% ($3.0 billion) to EDS' 1989 revenue.

3. Systems Operations Service Characteristics and Capabilities

The company currently operates 21 Information Processing Centers (IPCs) worldwide. The systems operations for many of its SO customers are conducted at these centers in a multiple-client environment. These IPCs are interlinked via network. The processing load can be shifted from one center to another as the need arises.

There are 122 other data centers operated and owned by EDS throughout the world, serving single clients. In addition, EDS operates other data centers that are owned by the client.

Most of its contracts are for a minimum of three to five years, but the terms and conditions vary considerably from industry to industry and cannot be categorized into convenient groupings, such as fixed price or cost plus fixed fee.

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EDS has the internal capabilities to provide all the required systems operations services to its clients, ranging from business consulting to equipment maintenance, but still chooses to use alliances to supplement its own resources in many instances. Typical alliance partners will be further identified in Section 8 below.

The company identifies two proprietary products that it believes gives it a competitive edge over its competitors. These are:

- Total Plan - This system is a fully integrated Health Insurance Administration processing package that increases its clients' productivity and decreases unnecessary benefit payments.

- C4 Technology Program - This system of programs is designed to standardize, enhance and integrate CAD, CAE, CAM and CIM capabilities for the product engineering and design tasks in the client base.

4. Markets Served

EDS cannot split out of its customer base of 7,000 those for whom it is performing systems operations functions exclusively. The demographics of the customer base are as follows:

- 6,938 commercial clients
- 40 state and local government operations
- 12 federal government agencies

EDS is a supplier to a broad range of industries in the commercial market. EDS provides systems operations services to federal, state and local government customers. Recent contract examples include the following:

- In August 1990, EDS won a five-year contract to provide life cycle management services of Standard Army Management Information Systems for the Army's Information Systems Software Center at Fort Belvoir (VA). Maximum contract value is approximately $116 million.

- In March 1990, EDS was awarded a seven-year, $45 million contract with the U.S. Small Business Administration (SBA) to operate the SBA's Washington data center, which supports 1,700 terminals at SBA offices around the country.

- EDS currently processes more than two-thirds of all Medicaid claims submitted in the U.S. Medicaid contract awards including the following:

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- During the first quarter of 1990, under a five-year competitive recompete contract with Kansas SRS, EDS will provide fiscal agent services and expand medical review, recipient assistance, provider relations, and enrollment services.

- In November 1989, EDS signed an eight-year, $16.5 million contract with Delaware's Department of Health and Social Services to operate the state's Medicaid Management Information System.

EDS offers financial institutions technology-based business solutions through systems integration, systems operations, and service bureau operations. Products and services include data processing, communications, information management, back-office, bank card, and payment services. The company currently serves more than 6,000 banks, credit unions, and savings institutions worldwide.

EDS provides FM, processing services and turnkey systems to commercial insurance companies and Blue Cross/Blue Shield organizations.

- During 1989, EDS processed over 391 million life, health, and casualty insurance claims.

- In March 1990, EDS and American International Healthcare, Inc. (AIH), a subsidiary of American International Group, announced plans to jointly develop and market managed-care information systems for the health insurance marketplace in the U.S. and abroad.

EDS also provides a range of systems operations and professional services to domestic and international clients. EDS was one of the world's first commercial systems operations specialists and has emerged as a major force in both government and commercial markets.

- Examples of recent domestic commercial contracts obtained by EDS include the following:

  - In August 1990, EDS was awarded a ten-year contract with the Permian Corporation to manage Permian's information technology in support of the energy company's oil and gas distribution operations.

  - In April 1990, EDS signed a ten-year contract with Westmoreland Coal Company to assume responsiblity for all of Westmoreland's processing and communications operations.

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5. Competitive Position

The company has been active in the commercial systems operations arena for 28 years and in the federal government arena for 23 years. In the early years, the process was known either as facilities management or operations management, but it is essentially the same set of activities that is now known as systems operations.

Approximately 55% of EDS' total 1989 revenue was derived from its parent company, GM, and 2% was derived from interest and other sources. The remaining 43% ($2.38 billion) of total revenue was derived from clients in various industries, including banking and finance, insurance, manufacturing, retail, distribution, transportation, and energy.

EDS' 1989 source of revenue by industry market (including captive GM revenues) follows:

Manufacturing	41%
Financial	15%
Government	11%
Insurance	6%
International	16%
Other	11%

Corporate management at EDS recognizes the following primary competitors in its major markets. A different set is dominant in each sector, though some are common to both sectors. Exhibit EDS-1 identifies them for each sector.

EDS-1

Major Competitors in Each Market Sector

Commercial	Federal
IBM	IBM
CSC	CSC
Andersen Consulting	Boeing
Perot Systems	PRC, Inc.
Systematics	Unisys

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6. Recent Events

Recent acquisitions and joint ventures concluded by EDS include the following:

- In September 1990, EDS joined with Hewlett-Packard to finance the purchase of Ingres Corp., a relational data base supplier, by ASK Computing, a manufacturing software developer. In return for $40 million, EDS will get a 20% stake in ASK and access to a strong base of manufacturing and data base technologies.

- In March 1990, EDS purchased a 25% equity interest in Thomas Group, Inc (TGI) and jointly will market TGI's Accelerated Business Competitive (ABC) programs through EDS' Manufacturing and Distribution Strategic Business Unit.

- In January 1990, EDS acquired a 30% interest in Infocel, Inc., a Raleigh, NC-based provider of software products for local governments, education, and public safety.

- In May 1989, EDS and Hitachi, Ltd. announced the completion of their acquisition of National Advanced Systems Corporation (NAS) from National Semiconductor Corporation. EDS and Hitachi have formed a new, independently operated, joint venture company, Hitachi Data Systems Corp., which will market and distribute Hitachi PCM mainframe and peripheral equipment. EDS holds a 20% equity in the new venture.

- In April 1989, EDS acquired BancSystems Association, Inc., (Westlake, OH), a subsidiary of Society Corporation that provides credit card transaction processing services to the financial services industry. Terms of the purchase were not disclosed.

BancSystems provides MasterCard and Visa credit and debit processing and related services to more than 180 financial institutions in Ohio and seven other states, with more than 2.4 million cardholders and 38,000 merchants. The company had approximately 300 employees at the time of the acquisition.

- In April 1989, EDS acquired the EFS electronic funds transfer (EFT) business of Automatic Data Processing, Inc. (ADP). Terms of the acquisition were not disclosed.

ADP's EFT business includes a range of services for automatic teller machines and point-of-sale applications for the banking industry and The Exchange, ADP's EFT network.

Headquartered in Clifton (NJ), ADP's EFT operations employ nearly 300 people and supply one of the largest networks in the industry.

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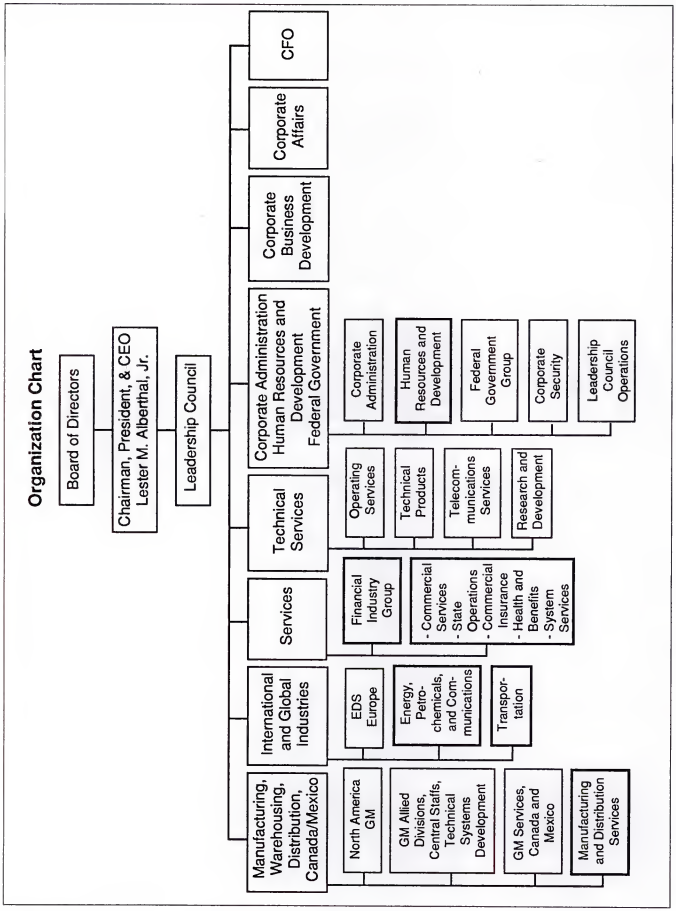

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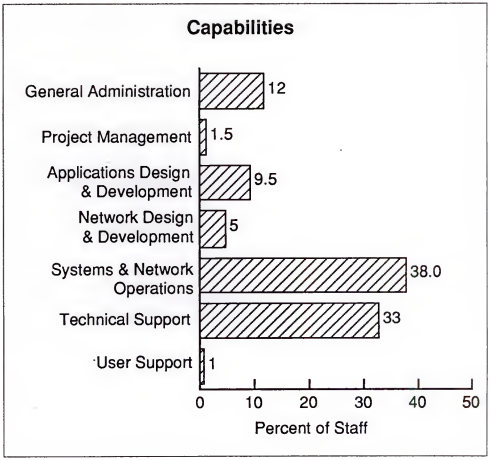
- In March 1989, EDS and Hewlett-Packard signed an agreement that formally establishes the framework for cooperation on systems integration projects. Under the terms of the agreement, HP and EDS will submit joint proposals to customers for the development, design, management, and support of projects requiring the integration of hardware, software, and project management services.

7. Organization

The corporate organization chart is presented in Exhibit EDS-2. Highlighted sections represent operating units that have systems operations activities in the United States. The units with responsibilities for GM business are not highlighted.

EDS has reported that more than 16,000 of its employees are engaged in systems operations activities. Of this total, 96.8% are servicing commercial accounts while the remaining 3.2% work on federal government contracts. Exhibit EDS-3 illustrates how those staff capabilities are distributed.

EDS-3



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8. Systems Operations Alliances

EDS has a strong, active alliance program for its systems operations business. EDS states that through a variety of partnership agreements, it is able to provide customers with greater value through enhanced technological and industry knowledge, resources, products and services. Joint development allows EDS to serve as a major influence in the development of vendor hardware and software. These strategic alliances enable EDS to draw on the strength and expertise of other companies and offer a wider range of services and products to meet customer needs.

The company has in place more than 5,000 vendor contracts with support organizations. Typical of these partnerships are the following:

- ASK Computing, Banc One and Norwest will do custom application design and development work for EDS SO clients in their respective fields of manufacturing control, banking and finance, and transportation.
- Earth Observation Satellite Company and Infocel provide their proprietary software to clients through EDS when these specialized products are required.
- Diebold is a provider of maintenance for ATM equipment for banking customers for which EDS does systems operations.

9. Systems Operations Marketing Strategy

EDS expects to continue to grow significantly in the systems operations market, both by expanding penetration in current markets and by entering new markets. In the latter case, the selection criteria to identify new markets will include the size of companies in that sector, the changes occurring in that sector and how they will influence the receptivity of prospects to systems operations. In addition, the market sector will have to include enough viable prospects to make entry a profitable venture for the company.

Currently, EDS gets about 80% of its revenue from its existing client bases in the commercial and federal government sectors. The rest of the revenue is generated by new accounts. In the case of new commercial business, half is directly solicited and half is obtained through the recommendations of consultants.

Exhibit EDS-4 shows how EDS obtains new business in the two major market sectors. Note that most of the business in the federal government sector is acquired by responding to formal bid solicitations or RFPs, while less than 15% of the commercial contracts are obtained that way. Note also that proactive sales efforts result in about one-third of the new business in the commercial sector, but this avenue is severely restricted in the federal sector because of the competitive bid solicitation system.

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EDS-4

Sources of New Business

	Percent	
	Commercial	Federal
Responding to solicitations	12	75
New contracts with existing clients	45	20
Proactive direct sales	33	5
Other	10	

EDS has a 28-year history of success in facilities management to establish its credibility in the systems operations industry. It uses this background as well as its known telecommunications expertise to establish its reputation relative to its competitors. It owns the largest privately owned network in the country, which links its 21 Information Processing Centers.

It positions itself as uniquely qualified to provide any of the resources that a particular SO opportunity may require. It has also pioneered the acquisition of client data centers and operations staff to ease the transition to external systems operations environments and provide an additional financial incentive for the move.

10. Systems Operations Customer Base

EDS has 7,000 customers worldwide. Management cannot identify specifically which of these are exclusively systems operations clients. Five typical major systems operations clients give a good indication of the range of EDS' contracts, however:

- Shell Brazil - EDS operates and manages two VAX computer centers and two communications command centers.
- U. S. Army - EDS provides systems development, conversion and maintenance resources for Standard Army Management Information Systems.

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- Security Connecticut Life - EDS manages the data center operations and communications, including business analysis, systems maintenance and development, programming and design, and project management.

- First Fidelity Bancorporation - EDS will convert a number of applications systems into a unified, companywide single platform and manage the resultant data center.

- Western Union - EDS will execute a 10-year facilities management contract to provide processing and systems engineering support for the Business Applications Systems division.

11. Summary and Future Directions

EDS, the pioneer in facilities management, has broadened its services and is the clear leader in the commercial systems operations business. Its size, experience, and financial resources will continue to make it a very aggressive and capable competitor in this market.

Its broad vertical market focus and extensive early experience has recently been supplemented with an aggressive acquisition policy in which it has obtained not only major processing contracts, but also much expertise in such fields as title insurance and airline reservation systems.

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COMPANY PROFILE

The Genix Group

1. Key Systems Operations Contacts

The systems operations activities of The Genix Group are under the direction of Rudy Cifolelli, who is Executive Vice President and Chief Operating Officer. He reports directly to Steven Ewing, President and Chief Executive Officer, MCN Corporation. The executive offices of the company are located at:

5225 Auto Club Drive
Dearborn, MI 48126

2. Description of Principal Business

The Genix Group functions as a wholly owned data processing subsidiary of its parent corporation, MCN Corporation. MCN Corporation is a holding company for Michigan Consolidated Gas and MCN Investment Corporation. The Genix Group consists of two computer outsourcing companies, Genix Corporation and MCN Computer Services, Inc. In the most recent fiscal reporting period, The Genix Group listed 270 full-time employees and sales in excess of $50 million. The Genix Group provides mainframe computer capacity; on-line and off-line data storage and management; systems software support; data telecommunications network management; and high-quality, high-speed laser printing.

3. Systems Operations Service Characteristics and Capabilities

Exhibit GG-1 shows how The Genix Group views the change in its market over the next few years. All of the numbers represent a percentage of total revenues derived from systems operations activities. The first chart pairing indicates that there will be slight change in the next few years in the percentage of equipment which is client owned. The Genix Group will realize a slight increase in the percentage of revenues derived from vendor-owned equipment contracts.

The second pairing shows no expected difference in location of equipment. This suggests that The Genix Group will continue to maintain equipment at its own facilities.

The third pairing in Exhibit GG-1 shows very slight change in Genix's single-client/multiple-client ratio. This suggests that as Genix grows its systems operations business, clients will find it more economical to utilize shared sites.

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EXHIBIT GG-1

Market Characteristics

		1989 (Percent)	1992 (Percent)
Equipment Ownership Percent of Revenue	Genix Group	90	95
	Client	10	5
Equipment Location Percent of Revenue	Genix Group	95	95
	Client	5	5
Processing Percent of Revenue	Shared	95	98
	Dedicated	5	2
Applications Software Developed by	Client	50	30
	Genix Group	0	0
	Third Party	50	70

The three pairings, taken together, suggest virtually no change in the way Genix will conduct its systems operations business. Currently, all of Genix's systems operations activities involve third-party or client-developed applications software.

However, as the fourth pairing in Exhibit GG-1 shows, this will change slightly over the next few years. In view of its significant outsourcing services, Genix prefers to build on that expertise rather than expand into software development.

Exhibit GG-2 compares the distribution of systems operations revenue under various pricing alternatives. Genix sees no change in its business base over the next few years.

The bulk (80%) of Genix's systems operations contracts are five to eight years in duration. INPUT asked The Genix Group to characterize the duration of its contracts. The results showed a dominance of long-term contracts:

- 1 to 2 years: 10%
- 3 to 4 years: 10%
- 5 to 8 years: 80%

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EXHIBIT GG-2

Distribution of Revenue

Contract Type	1989 (Percent)	1992 (Percent)
Fixed Price	0	0
Transaction Volume	0	0
Resource Utilization	100	100
Cost Plus Predefined Margin	0	0

Exhibit GG-3 compares systems operations capabilities derived from internal sources versus those derived from alliances. The data suggests that Genix has established alliances for most of its systems operations capabilities. It is expected that Genix would make arrangements with an outside company for disaster recovery services. There are several firms specializing in this discipline, which depends highly on advanced technology for cost-effective solutions.

EXHIBIT GG-3

Capabilities

Internal and Alliances	None
Internal Only	• Computer Systems Operations • Network Management
Alliance Only	• Applications Design/Development • Applications Maintenance • Disaster Recovery Service • Equipment Maintenance • Outplacement for Technical Staff
Neither Internal nor Alliance	• Business Consulting • Packaged Applications Software

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4. Markets Served

Currently, The Genix Group derives all of its systems operations business from the commercial market. It serves more than 80 commercial customers within a wide range of vertical markets. Genix realizes contracts with revenues averaging $2.5 million annually. It focuses primarily on systems operations business utilizing IBM or compatible mainframe
equipment.

5. Competitive Position

Genix has been providing systems operations support in the commercial marketplace for six years. During 1988, Genix Corporation realized $21 million in revenues from commercial systems operations; in 1989, annual revenues derived from commercial systems operations were $50 million. This dramatic increase is due to the combination of revenues derived from MCN Computer Services Inc., and Genix Corporation.

As The Genix Group grows its systems operations business, it expects its primary competition to come from the large, established firms, including EDS, IBM, Litton, and Arthur Andersen.

6. Recent Events

- September 1990 - MCN Corporation announced the formation of The Genix Group to manage the firm's growth and acquisitions in the computer services industry. The Genix Group now consists of two companies, Pittsburgh-based Genix Corporation and Dearborn-based MCN/CSI.

- June 1990 - MCN Corporation announced an agreement to buy Genix Corporation, Inc., the data processing subsidiary of National Intergroup, Inc. MCN signed a $20 million purchase agreement for Genix.

- May 1990 - Genix Corporation signed Duracell, Inc. for a five-year, $11 million computer operations outsourcing contract. Genix will provide all required mainframe computer capacity, systems software, disk and tape storage, data telecommunications, and technical services necessary to support Duracell's business.

- March 1990 - Ground has been broken for a 37,000 sq. ft. addition to Genix Enterprises' 52,000 sq. ft. computer center in suburban Pittsburgh. The expansion is required to accommodate increased demand for the company's computer outsourcing services.

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- February 1990 - Genix Enterprises, Inc. signed a multiyear contract to assume data processing responsibilities for the AM General Division of LTV Corp. Genix will provide the mainframe computer capacity at its Pittsburgh data center to run AM General's software applications.

- February 1990 - Genix Enterprises, Inc. has been awarded a five-year, multimillion dollar computer operations outsourcing contract by Bailey Controls, a Cleveland-based manufacturer of process control equipment. Genix will provide Bailey Control with all required mainframe computer capacity, systems software, disk and tape storage, data telecommunications network management, and technical resources.

- February 1990 - Genix Enterprises won a three-year, $14 million computer operations outsourcing contract from National Steel Corporation. Genix will operate and manage National Steel Corporation-owned mainframe computer and telecommunications equipment, and provide necessary technical support.

7. Organization

As previously indicated, systems operations fall under the purview of The Genix Group, a subsidiary of MCN Corporation. Genix was founded by National Intergroup, Inc., in 1984 to capitalize on the information processing capabilities it had built for NII's metal businesses. Genix then expanded its customer base to include a wide variety of companies in diverse industries. In June 1990, MCN Corporation, which owns MCN Computer Services, Inc., agreed to buy Genix, thus enhancing MCN Corporation's outsourcing strength and competitive edge.

The Genix Group currently has a staff of 270 full-time employees supporting systems operations activities. The staff is engaged in the following areas:

- Network design and development: 30%
- Systems and network operations: 30%
- Technical support: 25%
- Sales: 10%
- General management and administration: 5%

8. Systems Operations Alliances

Although Genix indicated to INPUT that it currently has no formal alliance program for systems operations, it identified companies with which a partnership has been established. The Genix Group utilizes outside companies to help meet customer needs, such as outplacement services for affected technical staff.

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Genix has teamed with other companies for systems operations activities, as indicated in Exhibit GG-3.

9. Systems Operations Marketing Strategy

The Genix Group plans to expand within its existing client base as well as enter into new markets. With more than 80 commercial clients, Genix has significant opportunities for expansion within its client base. In fact, Genix estimates that in terms of revenue, 80% of its business comes from its existing client base, with the balance coming from new accounts.

In terms of new business, Genix expects to receive 70% of new contracts from proactive direct sales activity, with the balance coming from existing clients. This response, combined with earlier discussions on revenue projection, suggests that Genix's business will be growing rather steadily over the next few years. Genix expects its competitive edge to arise from its ability to effectively provide customers with outsourcing solutions that can enable the customer to focus on core business aspects.

10. Systems Operations Customer Base

As previously indicated, The Genix Group has more than 80 commercial systems operations customers. Among its listed clients are:

- H. J. Heinz Co. - All mainframe operations services for all North American affiliates
- American Standard, Inc. - Mainframe operation services for all business units in North America, with the exception of Trane
- Duracell, Inc. - All mainframe computer operations
- CompuWare - All mainframe computer operations

11. Summary and Future Directions

In responding to INPUT's survey, The Genix Group estimated that the commercial systems operations business is growing 20% each year with increasing margins. Genix did not offer a response for federal business.

INPUT expects Genix's systems operations business to grow steadily over the next few years. The combination of two outsourcing companies comprising The Genix Group should offer a strong competitive edge. Genix has given no indication of interest in entering the federal marketplace. However, INPUT believes that at some future point, Genix may enter the federal market as a subcontractor to some experienced federal prime vendor.

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Since Genix views systems operations as a highly profitable and steadily increasing business, INPUT expects it to increase both sales and marketing efforts in the near future.

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COMPANY PROFILE

McDonnell Douglas Systems Integration Company

1. Key Systems Operations Contacts

The Systems Operations activities at McDonnell Douglas are under the direction of Kerry Walbridge, who is Vice President and General Manager of Information Services. He reports directly to Mark Kuhlman, President of McDonnell Douglas Systems Integration Company. The executive offices of the company are located at:

325 McDonnell Boulevard
Mailcode 3061591
Hazelwood, MO 63042

2. Description of Principal Business

McDonnell Douglas Systems Integration Company functions as a wholly owned subsidiary of the parent corporation which does approximately $15 billion in annual revenues.

McDonnell Douglas Systems Integration Company is the remaining U.S.-based information systems business of McDonnell Douglas Corporation. McDonnell Douglas Information Systems Company was officially dissolved January 1, 1990 and several of its diverse units were divested.

The Systems Integration Company is now a more focused business, primarily offering engineering-based products and services to manufacturing, telecommunications, state and local government, insurance, and the federal government. Services include computer-aided software engineering, remote computing, and built environment technologies (architects, engineers and constructors, and infrastructure life cycle management).

In 1989, the Systems Integration Company had revenues of about $300 million with over 2,000 employees. About 70% of the Systems Integration Company's 1989 revenues are a result of SI activities and are divided between the commercial and federal markets.

3. Systems Operations Service Characteristics and Capabilities

Exhibit MD-1 presents graphically how McDonnell Douglas views the change in its market over the next few years. All of the numbers represent a percentage of total revenue derived from systems operations. The first chart pairing indicates that there will be no change (expected in the next few years) in the percentage of revenues generated from client-owned equipment. The 20% figure quoted by McDonnell Douglas is somewhat higher than that provided by most respondents to INPUT's

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survey. In general, most systems operations vendors derive greater revenues through their own equipment than through client-owned equipment. To realize 20% of revenues from client-owned equipment, McDonnell Douglas appears to operate as much client-owned equipment as equipment owned by the firm itself.

The second chart pairing in Exhibit MD-1 shows that virtually no systems operations revenues are realized from client-owned sites. Practically all the client-owned equipment is operated on McDonnell Douglas premises. This again differs from most other respondents whose client-owned equipment is largely installed at client-owned sites.

The third chart pairing exactly matches the first. Virtually all its own equipment is shared among multiple clients and all client-owned equipment is dedicated to a single client. The first three pairings of boxes, taken together, suggest that McDonnell Douglas anticipates little change in the operating characteristics of the firm's systems operations business over the next few years.

Similarly, the fourth pairing in the exhibit shows no expected changes in the software mix. Nearly one-third of applications software is developed by McDonnell Douglas, with the remainder coming from the client.

EXHIBIT MD-1

Market Characteristics

	1989 (Percent)	1992 (Percent)
Equipment Ownership		
Client	20	20
Percentage of Revenue	80	80
Equipment Locations		
Client	2	100
Percentage of Revenue	98	
Shared vs. Dedicated Processing		
Dedicated	20	20
Shared	80	80
Applications Software		
Developed by McDonnell Douglas	30	30
Client	70	70

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Exhibit MD-2 compares the distribution of systems operations revenue under various pricing alternatives. As with the pairings in Exhibit MD-1, McDonnell Douglas sees no change in its business base over the next few years. The bulk of its contracts will be based on resource utilization, with smaller revenues derived from two other approaches.

The bulk (75%) of McDonnell Douglas' systems operations contracts are only one to two years in duration, with the remaining in the three to four year category.

EXHIBIT MD-2

Distribution of Revenue

Contract Type	1989 (Percent)	1992 (Percent)
Fixed Price	10	10
Transaction Volumes	10	10
Resource Utilization	80	80

Exhibit MD-3 compares systems operations capabilities derived from internal sources with those derived from alliances. McDonnell Douglas does not depend much on alliances in its SO business. It does rely on a variety of vendors for equipment maintenance and disaster recovery services.

On another issue, McDonnell Douglas has identified one proprietary technology which may give it an edge in bidding systems operations contracts. McDonnell Douglas has developed a Claims Management System for insurance companies. This may serve as a key differentiator in bids relating to this vertical industry and provides a basis for an applications SO offering.

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EXHIBIT MD-3

Capabilities

Internal only	• Business consulting • Computer systems operations • Network management • Applications design/development • Applications maintenance • Packaged applications software
Alliance only	• Disaster recovery services • Equipment maintenance

4. Markets Served

Currently, McDonnell Douglas derives most of its systems operations business from the commercial market. McDonnell Douglas has one major systems operations client in the federal government, which accounts for nearly $10 million in annual revenue. It also has numerous other federal clients, each contributing smaller revenue amounts. However, given its wide range of other work for the federal government, INPUT expects it to compete for more federal systems operations contracts. It currently has a wide range of commercial contracts, with revenues averaging $3 million annually. It focuses primarily on platform (as opposed to vertical industry applications) systems operations business, and on clients and prospects with DEC, IBM, and compatible equipment.

5. Competitive Position

McDonnell Douglas has been providing systems operations support in the commercial marketplace for 30 years. It also reports five years' experience in the federal market, although as stated earlier, it is deriving limited revenue from this market. It does not break out systems operations revenues separately. However, as already reported, the Systems Integration Company realized $300 million in total 1989 revenue. INPUT estimates systems operations annual revenues to be in the $15 million to $25 million range. As McDonnell Douglas grows its systems operations business, it expects its primary competition to come from established firms, including EDS, Litton and Genix.

The Systems Integration Company has not been active on a large scale in network management and operations since the sale of its Tymnet division. The Systems Integration Company is indirectly involved in networking through its work for telephone companies designing systems to support network engineering.

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6. Recent Events

In 1989, McDonnell Douglas sold its network systems business, including the Tymnet public data network, to British Telecom. The price was $355 million. However, as shown in Section 10 below, McDonnell Douglas continues to provide network support to its outsourcing clients. The parent corporation, like many other aerospace companies, is under intense financial pressure as a result of defense spending cutbacks. It initiated several steps in 1990 to reduce spending by more than $700 million annually. Included are:

- An 11% reduction in total employment, with 14,000 to 17,000 jobs being eliminated by the end of 1990
- Reduced capital budgets
- Cuts in travel, consultants, and advertising
- A 50% reduction in company contributions to the salaried savings plan

Since systems operations represents such a small portion of overall revenues, it is not clear how much these cuts will affect this line of business. However, it is likely that systems operations will function on a pay-as-you-go basis since the parent corporation will be unable to invest significant amounts of capital.

7. Organization

As previously indicated, systems operations falls under the purview of McDonnell Douglas Systems Integration Company. This in turn is a wholly owned subsidiary of McDonnell Douglas Aerospace.

8. Systems Operations Alliances

McDonnell Douglas has not identified any formal alliances for its systems operations activities.

The Systems Integration Company has long-term marketing arrangements with most major hardware vendors (e.g., DEC, IBM, HP/Apollo, SUN), as well as selected software vendors of generalized products, such as Oracle. The Systems Integration Company will team on bids with hardware vendors, accounting firms, and other systems integrators when required. The Systems Integration Company will subcontract when specialized skill are required. Since 1988, the Systems Integration Company has been a preferred vendor of General Motors/EDS, working to standardize CAD/CAM systems within GM.

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9. Systems Operations Marketing Strategy

The Systems Integration Company's emerging strategy is to tailor solutions for targeted niches in partnership with clients to whom it can bring proven core products and business understanding. Target niches include:

- Manufacturing companies
- AEC and public sector units with infrastructure systems needs (e.g., transportation and environmental agencies)
- Telephone companies
- Insurance companies
- Federal customers

Within the systems operations subset, McDonnell Douglas expects to obtain new contracts through the following means:

- Responding to bid solicitations 30%
- New contracts with existing clients 40%
- Proactive direct sales activity 30%

10. Systems Operations Customer Base

As previously stated, most of McDonnell Douglas' systems operations business currently comes from the commercial market. Clients include the following:

- TRANE: Outsourcing of four primary user group locations as well as providing a backbone network
- MEMC (Formerly Monsanto Electronic Materials Corp.): Outsourcing of MVS/CICS and VM/370, as well as providing a worldwide telecommunications network
- Purina Mills Inc: Processing of MVS/IMS/DB2 systems utilizing an internally developed network and report distribution system
- Gallagher Bassett: Outsourcing of claims processing

11. Summary and Future Directions

As McDonnell Douglas continues to grow its systems operations business, it will encounter a wide range of competitors, each with their own special offerings. McDonnell Douglas will most likely tie its systems operations efforts to its strong systems integration and software capabilities.

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COMPANY PROFILE

Mellon Bank

1. Key Systems Operations Contacts

The systems operations activities at Mellon Bank are under the direction of George P. DiNardo, an Executive Vice President. He reports directly to Keith Smith, Vice Chairman of the corporation. The company's executive officers are located at:

Four Mellon Bank Center
Pittsburgh, PA 15259-0001
(412) 234-5841

2. Description of Principal Business

Systems operations activities at Mellon Bank are provided by Mellon Information Services, a division within the overall organization. As a bank holding company, Mellon Bank offers the typically wide range of retail, corporate, and special banking services. In addition, it has significant presence in various technology-related services. It provides these services, primarily to the banking industry, through its Datacenter Division and its Network Services Division. It also provides various non-computer consulting services.

The Datacenter Division was established in 1961 to use the excess capacity of Mellon Bank Corporation's computer equipment and to help offset the bank's sizable computer equipment expense. Datacenter shares the equipment it uses for its processing services with Mellon Bank and provides computer services to Mellon Bank affiliates.

3. Systems Operations Service Characteristics and Capabilities

Exhibit MB-1 presents Mellon's view of the possible changes in its market over the next few years. All of the numbers represent a percentage of total revenue derived from systems operations and processing services. The first chart pairing indicates that there will be little change in the low percentage of equipment which is client owned. Although it is growing slightly, Mellon expects this sector to continue to be a very minor portion of its overall systems operations activities.

The second pairing shows identical percentages as the first for equipment locations. This suggests that Mellon will continue to own all the equipment at its own facilities, while owning none of the equipment at client sites.

The third pairing in Exhibit MB-1, while identical in the 1989 and 1992 estimates, shows an interesting contrast to the first two pairings. Although only 2% of its equipment is dedicated to a single client, this is 2% of the Mellon-owned equipment only. It does not apply to the five client-

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MB-1

Market Characteristics

		1989 (Percent)	1992 (Percent)
Equipment Ownership Percent of Revenue	Mellon	95	92
	Client	5	8
Equipment Location Percent of Revenue	Mellon	95	92
	Client	5	8
Processing Percent of Revenue	Shared	98	98
	Dedicated	2	2
Applications Software Developed by	Client	2	10
	Mellon	95	80
	Third Party	3	10

MB-2

Distribution of Revenue

Contract Type	1989 (Percent)	1992 (Percent)
Fixed Price	95	90
Transaction Volume	3	5
Resource Utilization	2	5

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owned sites. Just as with these sites, Mellon has little interest in growing its dedicated processing business. The shared business represents more profitable work, in the same way that a time-share condominium is potentially more profitable to its seller than a traditional one-owner sale.

The fourth pairing shows that, while most applications software currently in use was developed by Mellon, this percentage will decline slightly over the next few years. As Mellon expands its systems operations business, software not developed by Mellon will be used more often. INPUT does not view this as a reduction in Mellon-provided software. Rather, it merely suggests that Mellon's systems operations business will grow slightly faster than its software penetration.

Currently, Mellon reports work at seven data centers, five of which are owned by clients. However, since 95% of revenues are derived from the two Mellon-owned sites, work at the other sites is currently contributing little to Mellon's bottom line. Mellon's stated intention to increase this business, both absolutely and as a percentage of SO revenues, suggests likely expansion beyond these five sites. However, most of this growth will occur with client-owned terminals and printers, rather than central processors.

Exhibit MB-2 compares the distribution of systems operations contracts under various pricing alternatives. Unlike some other vendors INPUT has profiled, Mellon expects no dramatic change in its pricing approach. However, the high percentages for fixed price include remote job entry (RJE) work based on a fixed unit price with variable volume.

INPUT asked Mellon to characterize the duration of its contracts. The results showed a dominance of mid-length projects:

- 1 to 2 years 15%
- 3 to 4 years 75%
- 5 to 8 years 10%

Currently, Mellon Bank has no federal business.

Exhibit MB-3 compares systems operations capabilities derived from internal sources with those derived from alliances. The data suggest that Mellon has established alliances for most of its systems operations capabilities. It is somewhat surprising that Mellon handles network management and disaster recovery service without any outside teaming arrangements. There are several firms specializing in each of these two disciplines, and each discipline depends highly on advanced technology for cost-effective solutions. The data also indicate that, after developing the clients' application software, Mellon sometimes hands it off to another firm for continuing maintenance, depending on client preference.

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Capabilities

Internal and Alliances	• Business Consulting • Computer Systems Operations • Applications Design/Development • Packaged Applications Software • ATM Maintenance
Internal Only	• Network Management • Disaster Recovery Service
Alliance Only	• Applications Maintenance
Neither Internal nor Alliance	• Equipment (CPU) Maintenance

On another issue, Mellon reports the use of several proprietary technologies that give it a competitive edge:

- Datamover, supporting CPU-to-CPU data transmission
- Disaster recovery at the Philadelphia location
- Programmers' workbench capabilities, including CASE application development tools
- Network management capabilities

It should be noted that, for all but the third item, Mellon does not rely on external alliances (as listed in Exhibit MB-3).

4. Markets Served

Mellon Bank serves more than 800 commercial processing services and systems operations customers. However, it currently does no federal business in the systems operations area. Mellon Bank has chosen to focus on several vertical markets. In addition to its obvious banking expertise, Mellon is also pursuing customers in the following areas:

- Financial firms
- Health care
- Utilities
- Manufacturing

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Mellon is also making limited efforts in other areas.

5. Competitive Position

As previously indicated, Mellon Bank has been providing processing services and systems operations services on a contractual basis for nearly 30 years. All of this has been in the commercial market. It is just now looking into the feasibility of entering the federal market. It does not report its systems operations revenues separately. Overall, it reported $3.269 billion in 1989 sales, which was virtually identical to1988 sales. It reports average revenue of $250,000 for its RJE customers and $1 million for its other systems operations clients, with the majority of revenues coming from processing services clients.

When considering competitors, Mellon listed the following firms:

- EDS
- IBM
- Citicorp
- Litton
- McDonnell Douglas

The inclusion of IBM is significant, since IBM just recently entered the systems operations business, capturing the business at several southern banks, including Bank South and Hibernia Bank.

6. Organization

As previously indicated, Mellon Bank provides systems operations services through Mellon Information Services. It currently has approximately 350 employees engaged in systems operations activities. The bulk of this staff is engaged in three areas:

• Systems and network operations	44%
• Technical support	27%
• User Support	15%

7. Systems Operations Alliances

Despite the teaming activities listed in Exhibit MB-3, Mellon reports a formal alliance program only with Atlantic Research. It has established informal linkages for those items listed in the exhibit. However, for primary systems operations activities, Mellon prefers to go it alone whenever possible. It includes the following companies among its teaming partners:

- Price Waterhouse for systems operations support and application programming

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- Atlantic Research Corporation for systems operations support
- Pittsburgh Business Consultants for applications support
- Pacific Corporation and Bell Atlantic for leasing and communications equipment support

8. Systems Operations Marketing Strategy

Mellon Bank seeks to expand within its existing client base as well as to enter into new markets. With more than 800 clients, Mellon has significant opportunities for expansion within its client base. In fact, Mellon estimates that, in terms of revenue, 15% of its business comes from new clients, with the balance coming from its existing client base. This is typical of most firms with a large client base.

In terms of new business, Mellon expects to receive 10% of new contracts from existing clients, with the balance coming from proactive direct sales activity. This response, combined with earlier discussions on revenue projections, suggests that Mellon's business will be growing fairly slowly over the next few years. This probably results from the current sluggishness of the economy as well as the ferocity of the competition. Mellon does intend to participate in formal solicitation activity as the opportunity presents itself. Mellon expects its competitive edge to arise from the following factors:

- Innovative pricing schemes
- Value-added options on telecommunications application economization
- Disaster recovery

9. Systems Operations Customer Base

As previously indicated, Mellon Bank has more than 800 systems operations customers, divided between RJE services and full operational support. Among its listed clients are:

- The Shareholder Services Group (a subsidiary of American Express) for mutual funds processing
- Advest Corporation for financial products
- Dollar Drydock Savings Bank

As the systems operations market continues to evolve, Mellon may choose to enter additional vertical markets.

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10. Summary and Future Directions

In responding to INPUT's survey, Mellon Bank estimated that the commercial systems operations business is growing 15% each year, with increasing margins. Mellon further estimated that federal work is growing at only 6% each year, with decreasing margins. This viewpoint explains Mellon's lack of interest in pursuing the federal market, with the exception of Resolution Trust Corporation opportunities.

INPUT expects Mellon's commercial systems operations business to grow slowly but steadily over the next few years, reflecting overall business conditions. At some future point, Mellon may enter the federal market, most likely as a subcontractor to some experienced federal prime vendor.

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COMPANY PROFILE

Power Computing Company

1. Key Systems Operations Contacts

The systems operations activities at Power Computing are under the direction of Robert Andrews, who is Vice President and General Manager. He reports directly to John Ruckert, Vice President of the Electronic Information Systems Division of McDermott International, Inc. The executive offices of the company are located at:

1930 Hi Line Drive
Dallas, TX 75207

2. Description of Principal Business

Power Computing is a data processing services provider. A division of Babcock & Wilcox, Power Computing has been supplying computer information services for more than 25 years. Babcock & Wilcox is a major operating unit and wholly owned subsidiary of McDermott International, Inc., a $2.6 billion worldwide energy services company.

3. Systems Operations Service Characteristics and Capabilities

Exhibit PCC-1 shows how Power Computing views the change in its market over the next few years. All of the numbers represent a percentage of total revenue derived from systems operations activities. The first chart pairing indicates that there will be significant change in the next few years in the percentage of equipment that is client owned. Power Computing will realize a reduction in the percentage of revenues from its vendor-owned equipment contracts.

The second pairing shows slightly different percentages from the first for equipment locations. This suggests that Power Computing will continue to maintain a significant percentage of equipment at its own facilities, while realizing a slight increase in revenue from equipment at the client site.

The third pairing in Exhibit PCC-1 shows a significant change in Power Computing's single-client/multiple-client ratio. This suggests that as Power Computing converts ownership of vendor equipment, it will begin dedicating equipment to the client.

The three pairings, taken together, suggest some significant changes in the way Power Computing will conduct its systems operations business. However, since it currently supports only two centers, some changes would be expected as the business grows.

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The fourth pairing shows that while most applications software currently in use was developed by a third party, this percentage will decline significantly over the next few years. As Power Computing expands its systems operations business, software developed by the company will be used more often. However, Power Computing has determined that it also can realize high revenues when applications software is developed by third-party vendors for the clients.

EXHIBIT PCC-1

Market Characteristics

		1989 (Percent)	1992 (Percent)
Equipment Ownership Percent of Revenue	PCC	100	80
	Client	0	20
Equipment Location Percent of Revenue	PCC	100	90
	Client	0	10
Processing Percent of Revenue	Shared	100	50
	Dedicated	0	50
Applications Software Developed by	Client	25	40
	PCC	5	20
	Third Party	70	40

Exhibit PCC-2 compares the distribution of systems operations contracts under various pricing alternatives. Unlike some other vendors INPUT has profiled, Power Computing expects no dramatic change in its pricing approach.

The bulk of its charges will be from resource utilization contracts, although a slight reduction is expected.

The bulk of Power Computing's systems operations contracts are three to four years in duration.

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EXHIBIT PCC-2

Distribution of Revenue

Contract Type	1989 (Percent)	1992 (Percent)
Fixed Price	0	10
Transaction Volume	0	0
Resource Utilization	80	70
Cost Plus Predefined Margin	10	10
Other - Fixed Price initially, then becomes Resource Utilization	10	10

INPUT asked Power Computing to characterize the duration of its contracts. The results showed a dominance of mid-length projects; however, as might be expected, federal contracts are generally longer than commercial contracts.

	Commercial	Federal
• 1 to 2 years	10%	10%
• 3 to 4 years	80%	50%
• 5 to 8 years	10%	40%

Power Computing indicated that it has the capabilities identified in Exhibit PCC-3. Power Computing has not established any formal alliance programs for systems operations services. However, it has teamed with other companies in all of the areas identified in Exhibit PCC-3 for outside assistance in systems operations contracts.

Power Computing has identified one proprietary technology that may give it an edge in bidding systems operations contracts. Power Computing has developed a Quality Assurance Program that has been accepted by the Nuclear Regulatory Commission. Power Computing believes this quality assurance program to be the first of its kind. This should serve as a significant differentiator in bids relating to this vertical industry.

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EXHIBIT PCC-3

Capabilities

Internal and Alliances	None
Internal and Contract by Contract Alliance	• Business Consulting • Computer Systems Operations • Network Management • Applications Design/Development • Applications Maintenance • Packaged Applications Software • Disaster Recovery Service • Equipment Maintenance • Local-Area Networks

4. Markets Served

Currently, Power Computing derives its systems operations business from both the commercial market and the federal government. The company currently serves approximately 10 commercial customers and five federal government clients. Power Computing does not focus on any particular vertical market. Rather, it identifies new target markets based on the size of the business. Power Computing provides processing services to many utilities operating nuclear power plants. In the past, it has focused on functional systems operations businesses, especially those involving IBM, Cray, and Cyber-based computing services.

5. Competitive Position

The company has been providing systems operations support for more than 25 years in the commercial and federal markets. As Power Computing expands its systems operations business, it expects its primary competition to come from the large and established firms, including Andersen Consulting, IBM, Litton Computer Services, CSC, Computer Task Group, and The Genix Group.

6. Recent Events

- November 1990 - Power Computing was awarded a three-year contract by Ocean Drilling and Exploration Company (ODECO) of New Orleans. Under the multimillion dollar agreement, Power Computing will provide payroll and human resources systems as well as furnish applications support.

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- October 1990 - Power Computing signed a three-year agreement for data processing services with Trinity Industries, Inc., a $1.3 billion manufacturer of metal products. The outsourcing contract is expected to save Trinity 25% of the cost of its mainframe-based processing over the term of the agreement.

- August 1990 - Power Computing Company signed a major outsourcing contract with Asea Brown Boveri Inc. (ABB), a $7 billion supplier of products and services to the power generation industry. Power Computing will provide mainframe services for ABB-Combustion Engineering Nuclear Power, a unit of ABB, on Control Data Corporation (CDC) Cyber computers. The multiyear arrangement provides ABB with full processing support during its transition from a mainframe environment to an environment of mainframes and workstations. This outsourcing contract is Power Computing's second for Cyber processing.

- February 1990 - Two multimillion dollar oursourcing contracts were awarded to Power Computing by Santa Fe Minerals, Inc., and Santa Fe Drilling Company. Under this three-year agreement, Power Computing will provide all IBM mainframe data processing services for the two petroleum industry companies. Data processing for Sphere Supply Company, a subsidiary of Santa Fe Drilling, also will be handled by Power Computing.

- October 1989 - Power Computing was awarded a three-year agreement by Ultramar, Inc., (formerly Beacon Oil Company) to provide data processing services. Power Computing will handle day-to-day computer processing for all of Ultramar's operations. According to Ultramar executives, Power Computing's reliability and processing capabilities were key factors in their decision.

- March 1989 - Loffland Brothers, a subsidiary of Kendavis Holding Company (KHC) is a contract drilling firm. In late 1989, KHC's almost-new corporate data center was shut down completely as part of financial restructuring. All of the computer processing related to Loffland Brothers was migrated to Power Computing.

7. Organization

As previously indicated, systems operations fall under the purview of Power Computing Company, which is a subsidiary of McDermott International. McDermott International, active in drilling equipment manufacturing, power generation facilities operation, and marine construction, derived $2.6 billion in revenues during 1989.

Power Computing has a large, diverse staff dedicated to systems operations activities. The bulk of this staff is engaged in five areas:

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- Systems and network operations: 41%
- User support: 16%
- Network design and development: 14%
- General management and administration: 12%
- Applications design and development: 9%
- Sales: 4%
- Project management: 4%

Power Computing is moving to expand its core outsourcing business into other professional services. The company launched a professional services division that offers data base and software development and document scanning services. That division anticipates $5 million in revenues for fiscal year ending March 1991.

8. Systems Operations Alliances

Despite the teaming activities listed in Exhibit PCC-3, Power Computing reports no formal alliance programs with other companies. For systems operations activities, Power Computing prefers to go it alone whenever possible. It has established informal partnerships for those items listed in Exhibit PCC-3.

9. Systems Operations Marketing Strategy

Power Computing plans to expand within its existing client base as well as enter into new markets. With more than 15 systems operations customers and 450 processing services customers, Power Computing has opportunities for expansion within its client base. However, Power Computing estimates that, in terms of revenues, 80% of its commercial business comes from new clients, with the balance coming from its existing commercial client base.

In terms of business revenues from federal clients, Power Computing derives only 20% from new accounts with the balance coming from its existing federal client base.

Within the systems operations subset, Power Computing expects to obtain new contracts through the following means:

	Commercial	Federal
• Responding to bid solicitations	10%	10%
• New contracts with existing clients	10%	80%
• Proactive direct sales activity	80%	10%

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10. Systems Operations Customer Base

As previously stated, Power Computing's outsourcing business comes from the commercial and federal markets. Its outsourcing clients include the following:

- ODECO
- Ultramar Inc.
- Asea Brown Boveri, Inc. - Combustion Engineering
- Santa Fe Minerals, Inc.
- Santa Fe Drilling Company
- Trinity Industries, Inc.
- Loffland Brothers Industries
- Duke Power

11. Summary and Future Directions

In responding to INPUT's survey, Power Computing estimated that the commercial systems operations industry is growing 30% each year, with decreasing margins. Power Computing further estimated that federal work is growing at only 10% each year, also with decreasing margins.

As Power Computing continues to grow its systems operations business, it will likely encounter a wide range of competitors, each offering their own special differentiator. Power Computing should succeed by partially tying its software services to its strong systems operation capabilities. As previously indicated, Power Computing's Quality Assurance Program has been accepted by the Nuclear Regulatory Commission. INPUT believes that the relationship will significantly enhance the company's ability to expand within this vertical market.

Power Computing has focused its activities primarily in the energy-related fields of process manufacturing and utilities, as well as oil and gas. Power Computing has a complete range of computers—from mini-computers to supercomputers—which is particularly appropriate for these industries.

To the extent that Power Computing can leverage these advantages to its systems operations business, it will be able to grow both its revenues and its overall market penetration.

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COMPANY PROFILE

SAIC

1. Key Systems Operations Contacts

The systems operations organization in SAIC reports to J. Robert Beyster, CEO and Lorenz A. Kull, President. SAIC is located at:

10260 Campus Point Drive
San Diego, California

2. Description of Principal Business

SAIC provides the federal government with a variety of systems integration and system operations services as well as professional services and high technology products in the areas of national security, environment, health and energy. Advanced technology products and services are also sold to commercial clients.

SAIC is one of the country's largest employee-owned companies. A $1 billion company, it has more than 11,000 employees in 200 offices worldwide. SAIC also has one of the most highly educated staffs in the industry. Fifty-three percent hold bachelor's of science or arts degrees; thirty-three percent hold master's degrees, and fourteen percent hold doctorate degrees.

3. Systems Operations Service Characteristics and Capabilities

All of the systems operations activities that SAIC performs are done on client premises in which the hardware is owned by the client. In all cases, the equipment is dedicated to the needs of that client. SAIC operates 20 data centers for the federal government in this manner.

Most of the applications software at these centers was developed by SAIC for the client agency. Generally the contracts are of greater than five years' duration and are mostly fixed-price contracts.

The company has the internal capabilities to provide all services to clients, but often teams with other companies in all areas but business consulting and computer operations to supplement the capabilities needed on a given contract. The distribution of SAIC's systems operations capabilities is shown in Exhibit SAIC-1.

SAIC has a particular niche in the area of hospital information systems, based on major contracts with the Department of Veterans Affairs and the Department of Defense. SAIC has won the DoD CHCS and Virginia IHC contracts, and acquired Di-Star Medical Systems Corporation.

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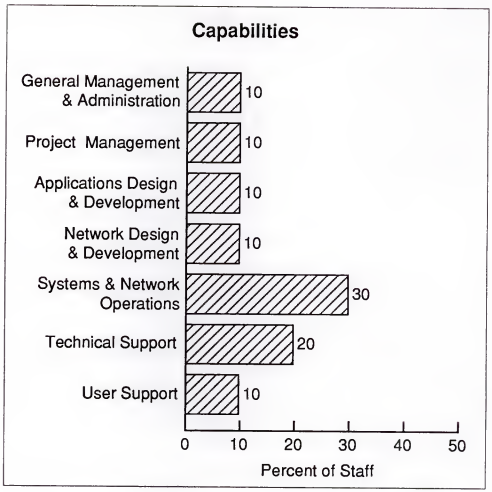
SAIC-1



4. Markets Served

SAIC provides systems operations services only to the federal government and has no commercial clients. All of its services are provided to three federal government agencies (DARPA, Veterans Administration and DoD Health Affairs), for which it runs a total of 20 data centers.

5. Competitive Position

The company has been in the systems operations business for the past 10 years. All of its clients have been federal government agencies.

Its estimated 1988 revenue for systems operations was $15 million; SAIC expects 1989 fiscal year revenues to be $35 million. Management considers its principal competition in the federal marketplace to be EDS, Unisys, and the PRC subsidiary of Black and Decker.

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6. Recent Events

In March 1989, SAIC won a contract with the Department of Defense to design and implement the medical information system for more than 700 military hospitals and clinics worldwide. The installations will stretch over an 8-year period. The system, now known as CHCS (Composite Health Care System) has been demonstrated in a hospital at Ft. Knox, KY.

In June 1989, SAIC won the contract to provide a new private data network to the Department of Veterans Affairs. The project, valued at $84 million over ten years, is called the Integrated Data Communications Utility (IDCU). SAIC will provide project management, systems integration, and tailored software. Its subcontractor, U.S. Sprint, will provide the network technology, customer premises equipment, transmission manufacturing, and necessary field support. Initial installation is expected to be completed within two years.

In September 1989, SAIC hired Gordon E. Myers to serve as a senior vice president supporting systems integration and software development. Mr. Myers joined SAIC after a distinguished 20-year career at IBM. Most of Mr. Myers' experience has been in the federal area, although in his last position he managed the Commercial Solutions Development (CSD) organization of IBM's Systems Integration Division.

In October 1989, SAIC acquired Di-Star Medical Systems Corporation, its principal subcontractor on CHCS. It had previously acquired the Software Products Division of Control Data Corporation. Using these two groups as well as other internal resources, SAIC developed its own product line for medical information systems, named "SAIC-Care."

In September 1990, SAIC won a $31 million contract with the Department of Energy (DOE) to provide ADP support services for DOE's Albuquerque data center. Under this five-year contract, SAIC will operate the data center and provide system and application programming and other ADP support services.

7. Organization

Systems operations activities are conducted within several of the operating divisions of SAIC. The organization chart in Exhibit SAIC-2 illustrates those organizations that conduct systems operations activities. SAIC serves its clients through a matrix organization, drawing resources from throughout the company.

There are approximately 150 people in the SAIC organization who are considered full-time systems operations staff.

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Organization Chart

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8. Systems Operations Alliances

Though SAIC does not have any formal alliance programs in its SO operations, teaming arrangements are used to provide additional capabilities in the areas of marketing, services and specific product areas that supplement SAIC's capabilities.

9. Systems Operations Marketing Strategy

SAIC management plans to increase its existing business by expanding in its current market sector rather than seeking new markets to enter. The decision on which contracts to pursue is based on return on investment criteria, after the risk factors have been evaluated and judged to be manageable. SAIC concentrates its marketing efforts on agencies in which its staff has more functional expertise. This enhances its win ratio substantially.

All of SAIC's new business is a result of responding to bid solicitations or RFPs solicited by the government agencies. SAIC generally gains SO opportunities as an outgrowth of systems integration contracts it has won. Management expects that pattern to continue.

10. Systems Operations Customer Base

As mentioned above, SAIC's customer base currently consists primarily of the CHCS medical centers it operates for the Department of Defense, a DARPA seismic center it operates for worldwide seismic monitoring, the nationwide packet-switching and network control facility for the Veterans Administration, and the Department of Energy data center in Albuquerque.

11. Summary and Future Directions

SAIC has successfully leveraged its professional services experience in the federal government arena to win bids on a number of system integration contracts that have then resulted in systems operations contracts.

SAIC expects to continue expansion of systems operations by focusing on federal agencies where it has demonstrated functional expertise.

INPUT expects the greatest change to occur in SAIC's commercial SO activities. Although SAIC has established a commercial presence through various specialized products and services, it is just now beginning to pursue commercial SO. SAIC will likely succeed in this market also. INPUT expects that, within three to five years, SAIC will be a much more important participant in the commercial SO market.

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COMPANY PROFILE

STM Systems Corp.

1. Key Systems Operations Contacts

The systems operations activities at STM Systems Corp. are under the direction of two vice presidents. The commercial systems operations business is under the direction of:

Amnon Zoher
Vice President, Central Region
650 McNichol Avenue
Willowdale, Ontario M2H 2E1
Canada

The federal systems operations activities are under the direction of:

Jim Over
Vice President, Federal Region
2220 Walkley Road
Ottawa, Ontario K1G 5L2
Canada

2. Description of Principal Business

STM Systems Corp. is a Canadian company that provides a range of information services worldwide to private and public sector clients. STM Systems Corp. is a wholly owned subsidiary of International Semi-Tech Microelectronics Inc. (ISTM) headquartered in Markham, Ontario. STM Systems Corp., with systems operations its major line of business, was formed by ISTM in late 1988.

3. Systems Operations Service Characteristics and Capabilities

Exhibit STM-1 presents how STM Systems Corp. views the change that will occur in its market over the next few years. All of the numbers represent a percentage of total revenue derived from systems operations activities. The first chart pairing indicates that there will be moderate change in the next few years in the percentage of equipment that is client owned. STM will realize a reduction in the percentage of revenues from its company-owned equipment contracts.

The second pairing shows a slight difference in equipment locations over the next few years. It suggests that STM will continue to maintain a significant percentage of equipment at its own facilities, while realizing a slight increase in revenues from equipment at the client site. This is very consistent with other vendors that responded to INPUT's survey.

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STM-1

Market Characteristics

		1989 (Percent)	1992 (Percent)
Commercial			
Equipment Ownership	STM	97	85
Percent of Revenue	Client	3	15
Equipment Location	STM	98	90
Percent of Revenue	Client	2	10
Processing	Shared	68	50
Percent of Revenue	Dedicated	32	50
Applications Software			
Developed by	STM	15	30
	Client	81	60
	Third Party	4	10
Federal			
Equipment Ownership	STM	70	65
Percent of Revenue	Client	30	35
Equipment Location	STM	75	30
Percent of Revenue	Client	25	70
Processing	Shared	16	20
Percent of Revenue	Dedicated	84	80
Applications Software			
Developed by	STM	10	40
	Client	60	20
	Third Party	30	40

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The third pairing in Exhibit STM-1 shows a slight change in STM's single-client/multiple-client ratio. This suggests that as STM converts ownership of vendor equipment, it will begin dedicating equipment to the client.

The three pairings of boxes, taken together, suggest some moderate changes in the way STM will conduct its systems operations business. Since it currently supports over 20 data centers, INPUT believes STM's operations will continue to be stable, even as the business grows.

The fourth pairing shows that while most applications software currently in use is developed by the client, this percentage will decline over the next few years, in both the commercial and federal sectors. As STM expands its systems operations business, software developed by the company will be used more often. Further, STM has determined that it can realize an increase in revenues when applications software is developed by a third-party vendor.

Exhibit STM-2 compares the distribution of systems operations contracts under various pricing alternatives. Unlike most other vendors INPUT has profiled, STM Systems Corp. currently has contracts with a combination of pricing approaches.

INPUT asked STM Systems Corp. to characterize the duration of its contracts. STM's systems contracts are of various lengths. Commercial and federal systems operations contracts have durations in the ranges listed below.

	Commercial	Federal
• 1 to 2 years	29%	15%
• 3 to 4 years	37%	40%
• 5 to 8 years	33%	45%
• Over 8 years	1%	-

Exhibit STM-3 compares systems operations capabilities derived from internal sources versus those derived from alliances. The data suggests that STM has made significant use of teaming in its systems operations activities.

4. Markets Served

STM Systems Corp. derives its systems operations business from both the commercial market and the federal government. The company currently serves approximately 123 commercial customers and 35 federal (Canadian) government clients. The company realizes contracts with annual revenues averaging $1.25 million in federal business, and $900,000 in the commercial sector. STM Systems Corp. has chosen to focus on several vertical markets, including:

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STM-2

Distribution of Revenue

Contract Type	Commercial 1989 (Percent)	Commercial 1992 (Percent)	Federal 1989 (Percent)	Federal 1992 (Percent)
Fixed Price	7	20	84	82
Transaction Volume	5	10	—	—
Resource Utilization	73	50	16	18
Cost Plus Predefined Margin	4	20	—	—
Combinations				
Transaction/Resource	7			
Fixed/Resource	2			
Trans/Fixed/Resource	2			

STM-3

Capabilities

Internal and Alliances	• Applications Design/Development • Applications Maintenance • Packaged Applications Software • Other: Microcomputers
Internal Only	• Disaster Recovery Service • Network Management
Alliance Only	• Business Consulting • Equipment Maintenance

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- Financial firms
- Health services
- Provincial government

5. Competitive Position

STM Systems Corp. has been providing systems operations services on a contractual basis for nearly 13 years. During this time, it has built a strong client base in both the commercial and federal marketplaces. With more than 155 systems operations clients, 1989 annual revenues were $110 million from commercial business. In federal business, 1989 annual revenues exceeded $43 million.

When considering competitors, STM Systems Corp. listed, by sector, the following firms:

Commercial
- EDS Canada
- IBM
- Andersen Consulting
- Le Group CGI

Federal
- IST Computer Services Company
- EDS Canada
- IBM

6. Recent Events

- November 1990 - Bell Canada renewed a contract with STM Systems Corp. for management information services in support of several of its systems, including systems for tracking inventory and operations measurement. The contract is worth $2.6 million over three years.

- October 1990 - STM Systems Corp. was awarded a contract by the Personal Insurance Company of Canada for computer processing services, disaster recovery services, and cross-Canada data communication. The three-year contract is worth $2.4 million.

- October 1990 - STM Systems Corp. acquired AIC Computers, Inc., exclusive distributors in Canada of Apricot high-performance microcomputers. The acquisition of the Canadian distributor of Apricot is part of STM's strategy to offer total solutions to clients through an extensive array of information products and services.

- August 1990 - STM Systems Corp. signed final closing documents for the acquisition of shares of Manitoba Data Services (MDS) from the Government of Manitoba in a deal estimated to be in excess of $150 million. In addition to the purchase of the shares, STM will establish a

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company called STM Investments (Manitoba) Ltd., to invest in small Manitoba information technology companies.

- June 1990 - STM SunGard Recovery Services, a division of STM Systems Corp., acquired the IBM mainframe computer "hot site" disaster recovery business of Bekeen Computer Corporation. A hot site is a fully equipped computer center providing backup services in the event of a disaster to a client's own computer systems.

- March 1990 - STM Systems Corp. helped the federal government in making the biggest and most complex migration of computer systems ever attempted in Canada. Thirteen mainframes and six minicomputers for more than twenty government departments were moved to a new systems integration center built by STM Systems Corp. Six hundred Ottawa-based employees of STM Systems Corp. are located at the new $12 million center.

- January 1990 - STM Systems Corp. was awarded an $11.1 million contract to provide systems integration services to Finance Canada. STM will create an integrated office computer system linking approximately 700 professionals and support staff in the Finance Canada department. The contract award strengthens the position of STM as the largest supplier of information technology services to the federal government.

7. Organization

STM Systems Corp. currently has approximately 700 employees engaged in systems operations activities. Sixty-five percent of the staff is involved in commercial systems operations activities, and the balance in federal business. STM Systems Corp. serves corporate and government clients through its two regions, as indicated in Section 1.

The following table identifies the percent of STM staff associated with each of the key categories required by systems operations firms:

Capability	Percent
General management and administration	9
Project management	3
Applications design and development	16
Network design and development	2
Systems and network operations	24
Technical support	13
User Support	11
Sales	7
Other: Data entry, clerical, secretarial	15

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8. Systems Operations Alliances

STM has established alliances with outside firms to supplement the company's capabilities with industry-specific knowledge. In the past, alliances have been used to support STM during periods of heavy workload. STM identified D&B Software as the company with which it has established an alliance for payroll and personnel software. STM has teamed with other companies for systems operations activities.

9. Systems Operations Marketing Strategy

STM Systems Corp. plans to expand within its existing client base as well as enter into new markets. When considering new target markets, STM identified the following selection criteria:

- Company size and growth rate
- Need for STM services
- Profit potential
- Competition in the market

With more than 155 clients, STM has significant opportunities for expansion within its client base. In fact, STM estimates that, in terms of revenues, 95% of its commercial business will come from existing clients, with the balance coming from new commercial accounts. Similarly, STM estimates that 90% of its federal business will be derived from existing clients, with the balance coming from new federal accounts. This is typical of most firms with a large client base.

In terms of new business, STM expects to receive the bulk of new commercial contracts from existing clients. However, the bulk of new federal contracts are expected from responses to bid solicitations. STM expects to obtain new contracts through the following means:

	Commercial	Federal
• Response to bid solicitation	12%	80%
• New contracts with existing clients	75%	15%
• Proactive direct sales activities	13%	5%

STM believes its competitive edge to be its ability to provide clients with total solutions for better management of their information needs. These solutions include facilities management, systems integration, and application software products. Additionally, the disaster recovery services offered by STM should offer a strong competitive edge.

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10. Systems Operations Customer Base

As previously stated, STM's systems operations business comes from the commercial and federal markets. Among its clients are:

- G.E. Canada Limited - STM provides facilities management, project management, systems and network operations, and technical support.
- Province of Ontario Savings Office - STM provides STM's on-line banking system, project management, application design and development, network and systems operations, and technical support.
- Ministry of Housing - Demand processing for production processing, facilities management, network management, and technical support.

11. Summary and Future Directions

In responding to INPUT's survey, STM estimated that the commercial systems operations business is growing 10% each year, with decreasing margins. STM further estimated that federal business is growing at only 5% each year, also with decreasing margins.

STM Systems Corp. is Canada's largest supplier of IBM-based processing services. The company manages data centers in Ottawa, Calgary, Winnipeg, Toronto, and Mississauga. STM Systems Corp. will provide the STM-SunGard disaster recovery service for IBM, DEC, Tandem, and Stratus installations.

STM currently manages mainframe and minicomputer facilities, both on- and off-site, for more than 20 major federal (Canadian) government installations, a steel company, a large retail chain, and a leading financial institution, using a variety of hardware environments including IBM, Amdahl and Tandem.

To the extent that STM can leverage these advantages in its future systems operations business, it will be able to increase both its revenues and its overall market penetration.

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COMPANY PROFILE

Systematics, Inc.

1. Key Systems Operations Contacts

The systems operations activities of Systematics Incorporated are under the direction of Collins Andrews, President of Operations for the company. He reports directly to Mr. John E. Steuri, Chairman and CEO of Systematics.

The executive offices of the company are located at:

4001 Rodney Parham Road
Little Rock, Arkansas 72212

2. Description of Principal Business

Systems operations service is the major line of business of the corporation. It operates as a subsidiary of Alltel Corporation, a provider of communications systems.

Systematics' products and services are designed exclusively for the financial industry (banks, savings institutions, credit unions, and mortgage service companies).

3. SO Service Characteristics and Capabilities

Exhibit SI-1 presents graphically how Systematics views the change in its market over the next few years. All of the numbers represent a percentage of total revenue derived from systems operations. The first chart pairing indicates that there are decreases expected in the next few years in the percentage of revenues generated from client-owned equipment. Systematics expects vendor-owned equipment contracts to become an even more significant portion of its overall systems operations activities.

The second pairing shows a parallel in percentages to the first for equipment location. This suggests that Systematics will continue to maintain equipment at client sites. However, as Systematics grows its systems operations business, it will purchase equipment for installation at vendor sites.

The third chart pairing shows no change in the mix of shared versus dedicated facilities. The three pairings, taken together, suggest some significant changes in the way Systematics will conduct its systems operations business.

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EXHIBIT SI-1

Market Characteristics

	1989 (Percent)	1992 (Percent)
Equipment Ownership		
Client	10	5
Percentage of Revenue	90	95
Equipment Locations		
Client	80	70
Percentage of Revenue	20	30
Shared vs. Dedicated Processing		
Dedicated	80	80
Shared	20	20
Applications Software		
Developed by Systematics	80	90
Client	10	5
Third party	10	5

The fourth pairing in Exhibit SI-1 shows the expected changes in the software mix. Eighty percent of applications software is now developed by Systematics with the remainder coming from the client or a third-party arrangement. The ratio for Systematics-provided software is expected to rise to 90% by 1992.

Systematics currently operates 69 data centers, in which a majority of the equipment is owned by Systematics. In the case of most of these 69 centers, the company leases space from the client to locate its equipment close to the client's operation. In 3 of the 69 company-owned centers, services are provided for multiple clients in an FM utility arrangement.

Exhibit SI-2 presents a view of how the company's revenues are distributed. Almost 75% of the revenue is generated from fixed-price contracts. Most of these are five years or longer in duration.

Systematics has developed a complete set of integrated banking and financial applications software termed Systematics Integrated Financial Software. There are both multinational and domestic versions of the products available. These applications, available through facilities management/services contracts and separately as software products, include:

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EXHIBIT SI-2

Distribution of Revenue

Contract Type	1989 (Percent)
Fixed Price	11
Transaction Volumes	9
Resource Utilization	7

- On-line delivery systems for all operating units from the back office to the ATM.

- Accounting systems for:
  - Demand deposits
  - Loans
  - Auxiliary operations
  - On-line collection systems

- Management systems for:
  - Financial management (FMS)
  - Asset/Liability management (ALMS)
  - Customer information (CIF)
  - Operating/Marketing information (SMS)

- Customer service management systems
  - Acquisition control systems
  - Profitability analysis systems
  - Tax reporting systems

- Transaction delivery systems
  - Teller systems
  - Branch automation systems

Systematics provides a full range of systems operation capabilities to its clients, as well as providing disaster recovery, education and training, and management consulting services. Occasionally Systematics supplements these capabilities with informal alliances, particularly in the areas of applications software, voice response systems, and equipment maintenance services.

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The company has developed proprietary software for IBM systems which it provides as a part of the systems operations agreement to reduce the client's investment. It also has proven methods for data center management and project management that it applies to the conversion and consolidation requirements of its systems operations contracts.

- Facilities management contracts are generally marketed to larger banks, those with deposits ranging from $250 million to $10 billion or more.
  - The computer hardware and data center staff are located in or near the bank.
  - Such contracts usually have a term of five years and include a 99-year nonexclusive license for the client to use the software for internal processing.
  - The company provides facilities management processing services from 69 company-owned data centers.
- Three of the company's data centers are devoted to serving the 56 currently active remote services contracts.
- Remote services clients may elect to purchase a nonexclusive license to continue use of Systematics' software following the original term of the remote services contract.
- Because processing is done at remote locations that service several clients, it tends to be less customized.

4. Markets Served

Systematics has concentrated its marketing efforts in the financial sector. Within the financial sector, all its 948 clients are in the banking and financial area, with service provided to commercial banks, savings and loan institutions, credit unions, and mortgage and finance companies.

- The majority of revenue is derived from commercial banks with deposits over $250 million.
  - Systematics began marketing its services internationally in 1987 and derived approximately 5% of its fiscal 1989 revenue from customers located in Europe, Asia, the Pacific, South America and Canada. Systematics has clients in 17 non-U.S. countries and regional offices in the U.K. and Singapore, handling sales and support in those areas.

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- In 1990 Systematics acquired Horizon Financial Software Corporation of Orlando, Florida. The Horizon system is widely regarded as the most functionally complete and fully integrated turnkey financial software available for the AS/400.

5. Competitive Position

The company has been providing systems operations services to the banking and financial community for 22 years. Revenues for calendar year 1990 were $255 million, with operating income of $34 million.

6. Recent Events

On November 30, 1990 Systematics announced that it had signed a letter of intent to acquire C-TEC Corporation's cellular telephone billing and information system. In addition, C-TEC will enter into a long-term outsourcing arrangement calling for Systematics to provide virtually all data processing services for C-TEC's telephone, cable television and cellular operations. Under terms of the agreement, Systematics will pay C-TEC for the rights to its Virtuoso (TM) software, as well as a royalty on new licensing fees during a specified period.

On October 25, 1990 Systematics acquired Computer Dynamics, Inc. (CDI) of Little Rock, Arkansas. CDI operates a mortgage data processing center and provides the application software to process more than 200,000 loans for 16 financial institutions in six states. The acquisition will allow Systematics to further leverage its loan processing capabilities and will create new growth opportunities. Systematics' software currently processes 2.7 million real estate loans on behalf of financial institutions nationwide.

On May 31, 1990, Systematics merged with Alltel Corporation, a communication company based in Hudson, Ohio, which services 1.1 million customers in 25 states. The prior major stockholder of Systematics, Stephens Group, Inc., agreed to the merger. The new agreement strengthens both organizations, both of which are strong financial performers. Under the new arrangement, Systematics gains access to the capital it needs to acquire third-party processing vendors. Alltel, with the merger, expands its activities into the information processing services business, an area in which it can offer complementary communication skills and services.

In 1989, Systematics acquired a data processing consulting business in Milwaukee from Banc One Wisconsin, a subsidiary of Banc One Corporation of Columbus, Ohio.

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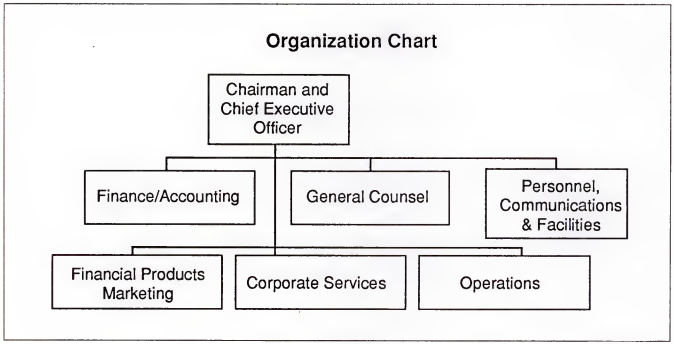
7. Organization

Systematics serves the banking and financial community across the United States. Its organizational structure is presented in Exhibit SI-3.

Five divisions, each headed by an executive vice president, are responsible for systems operations activities in their respective geographic areas. Each is self-contained and has the resources to fully meet client needs, but can supplement its staff with members of the Consulting

EXHIBIT SI-3



Services group for functional expertise, a specialized contract programming group for added client customization, and Systematics' own Training Division for client-specific training activities. Technical services can be called upon to provide customer support when Systematics' own software is involved.

8. SO Alliances

Though Systematics has no formal alliance program with other vendors to provide niche capabilities, it does enter into partnerships with other firms to provide additional capabilities such as equipment maintenance. It also will acquire and install third-party software for clients as the need occurs.

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9. SO Marketing Strategy

The company's strategy is to expand in its chosen market, the banking and financial community, rather than seek markets in other business sectors. Systematics' management considers two criteria in its expansion plans:

- Whether Systematics can add value to the application area
- Whether the profit margins are acceptable

Systematics currently derives approximately 85% of its revenue from its existing customer base and 15% from new accounts. Most of its new contracts are garnered through direct sales activity in the marketplace; only 20% of its contracts result from responses to bid solicitations from prospective clients.

Systematics is a company that provides the complete solution to a client's banking and financial information processing needs with its state-of-the-art comprehensive software. It provides a company with a broad range of experienced resources. All of this is available from a stable, conservatively-managed company that has 22 years of experience in the operations and management of processing centers for the financial and banking community.

10. SO Customer Base

Approximately 948 banks and financial institutions are currently served by Systematics. Typical customers are:

- Republic National Bank of New York
- The Integra Corporation of Pittsburgh
- Mitsui Manufacturers Bank in Los Angeles
- Gainer Bank in Merrivale, Indiana
- Peoples' Heritage Bank in Portland, Maine
- City National Bank in California

11. Summary and Future Directions

Systematics has concentrated its efforts in the banking and financial sector, providing a broad-based product to institutions of all sizes. Over the past five years, its growth rate has been greater than 15% and it expects to continue growing at that rate in its selected market segment. Its growth strategy includes the acquisition of third-party processing in its market sector, a strategy that will be more achievable since its merger with Alltel, which provided it with the necessary capital to expand by acquisition. It presents itself to prospects as a conservative, well-managed company with more than 20 years' experience—a model that would generally appeal to decision makers in the banking and finance industry.

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COMPANY PROFILE

Systems & Computer Technology

1. Key Systems Operations Contacts

The systems operations activities at Systems & Computer Technology (SCT) are under the direction of Michael J. Emmi, Chairman and Chief Executive Officer. The executive offices of the company are located at:

Great Valley Corporate Center
4 Country View Road
Malvern, PA 19355

2. Description of Principal Businesses

SCT has been in the systems operations business for 23 years. Systems operations is its principal business. In 1991, $65.4 million in annual revenue was derived from information services activities.

SCT provides systems operations, systems integration, and professional services, including custom software development and telecommunications consulting. These services are provided to state and local government agencies, educational institutions, and public/private utilities.

SCT is currently organized into five business units as follows:

- The Information Resource Management (IRM) division provides systems operations services, including management and staffing operations for the information resources (computing, office automation, telecommunications) of educational institutions and state and local governments. This division also includes SCT's customer software development and technical consulting services.

- The Software and Technology Services division incorporates SCT's packaged applications software products and telecommunications consulting services for education and government.

- Moore Government Systems, Inc. is a subsidiary acquired in 1990 that is headquartered in Baton Rouge, LA. The new business unit markets an integrated financial management system, which includes a utility billing system. The package is sold to local governments (cities and counties), and to public and private utilities.

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- Digital Systems Inc., SCT's second new business unit, is one of two subsidiaries acquired in 1991, and operates through Moore Government Systems, Inc. The firm provides billing and customer service systems to utility companies and electric cooperatives.

- Mentor Information Systems Inc., the other subsidiary acquired in 1991, is SCT's third new business unit. It markets financial and administrative software, including a utility billing system to local government and to public and private utilities.

3. Systems Operations Service Characteristics and Capabilities

Exhibit SCT-1 presents graphically how SCT views the change in its market over the next few years. All of the numbers represent a percentage of total revenue derived from systems operations. The first chart pairing indicates that there is significant change expected in the next few years in the percentage of revenues generated from client-owned equipment. SCT expects vendor-owned equipment contracts to become a more significant portion of its overall systems operations activities. However, the majority of activity will continue to come from client-owned equipment.

The second pairing shows a parallel in percentages to the first for equipment location. This suggests that SCT will continue to maintain equipment at client sites. However, as SCT develops its systems operations business, it will purchase equipment for installation at vendor sites.

EXHIBIT SCT-1

Market Characteristics

		1991 (Percent)	1994 (Percent)
Equipment Ownership Percent of Revenue	SCT	95	75
	Client	5	25
Equipment Location Percent of Revenue	SCT	95	75
	Client	5	25
Processing Percent of Revenue	Shared	0	25
	Dedicated	100	75
Applications Software Developed by	Client	5	5
	SCT	95	95

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The third chart pairing shows a significant change in the mix of shared versus dedicated facilities. This suggests that, as SCT converts ownership of client-owned equipment, it will begin using that equipment for other clients.

The three pairings, taken together, suggest some significant changes in the way that SCT will conduct its systems operations business. However, since it currently supports 41 client-owned data centers and only one vendor-owned data center, some changes would be expected as the business grows.

The fourth pairing in Exhibit SCT-1 shows no expected changes in the software mix. Ninety-five percent of applications software is developed by SCT with the remainder coming from the client. This response indicates that SCT is leveraging its software capabilities to increase its systems operations business.

Exhibit SCT-2 compares the distribution of systems operations revenue under various pricing alternatives. As with the pairings in Exhibit SCT-1, SCT sees significant change in its business share over the next few years. SCT's systems operations revenues will shift from predominantly time and materials to an even mix of fixed price and time and materials.

SCT's IRM division contracts typically cover a three- to five-year period, with an option to renew. SCT derives its systems operations revenue largely from colleges, universities, and other educational institutions, in addition to state and local government agencies.

Exhibit SCT-3 compares systems operations capabilities derived from internal sources versus those derived from alliances. The data suggest that SCT has made limited teaming effort for its systems operations activities. SCT has informal alliances with DEC, Sequent, and Hewlett-Packard to leverage its internally developed applications software. It uses SORBUS for equipment maintenance. SCT apparently has no special arrangements for disaster recovery services.

EXHIBIT SCT-2

Distribution of Revenue

Contract Type	1989 (Percent)	1992 (Percent)	1993 (Percent)
Fixed Price	25	50	75
Time and Materials	75	50	25

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SCT has identified proprietary products that give it an edge in bidding systems operations contracts. SCT has developed 4GL custom applications software using Oracle systems software. The products are for the education and state and local government vertical markets, and often are the key differentiators in bids in these industries.

EXHIBIT SCT-3

Capabilities

Internal and Alliances	None
Internal Only	• Business Consulting • Computer Systems Operations • Network Management • Applications Design/Development • Packaged Applications Software
Alliance Only	• Equipment Maintenance
Neither Internal nor Alliance	• Disaster Recovery Service

4. Markets Served

Currently, SCT derives its systems operations business from the education sector, as well as from state and local government clients. SCT currently has a wide range of contracts with revenues averaging around $1 million annually. It focuses primarily on educational institutions, with about 60% of its total revenues derived from colleges, universities, and other educational institutions.

Currently, SCT has no federal systems operations business. Further, there is no indication that it intends to pursue the federal marketplace.

5. Competitive Position

SCT has been providing systems operations support in the educational, and state and local government markets for 23 years. It does not break out systems operations revenues separately. However, as already reported, SCT realized $65.4 million in 1991 revenues, and INPUT estimates that 50% came from systems operations. As SCT develops its systems operations business, it expects its primary competition to come from the following firms: Maxima, Communications Management Systems, Inc., Information Association, and American Management Systems, Inc.

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6. Recent Events

In the past year, SCT has continued to position its services business to take advantage of the ongoing trend toward outsourcing. It recently invested in a new name—OnSite Services—and developed a marketing strategy that positioned these services as "the computing management alternative" for higher education and government, as well as related markets. The new positioning established SCT's OnSite services as a solution for the critical challenges in its markets in the 1990s: higher costs, budget constraints, changing demographics, and pressure to provide more services while holding the line on spending.

A second significant development was a major penetration into the utilities (public and private) market, through a program of acquisition of three well-established firms in 1990 and 1991 (see Section 2) in that industry. By establishing a strong position in this market, one allied to the local government market in which SCT is a major player, the company has broadened its horizontal base, consolidating its status as a leading provider in the public sector.

In its software business, SCT has rounded out its line of administrative applications with the introduction of Financial Aid and Human Resources Systems. Financial Aid is a pivotal product in the higher education market because the issue of financial aid affects nearly every college and university student. These products join SCT's Student, Finance and Alumni/Development Systems to form a comprehensive administrative product line. SCT also recently introduced its Finance and Human Resources products into the local government marketplace. The company has announced IntelliQuest™, a natural language query system that allows its BANNER clients to access information from their administrative data bases using plain English queries.

7. Organization

SCT is currently organized into five business units, as described in Section 2.

In addition to the headquarters office, SCT maintains regional offices in Irvine, CA; Dallas, TX; Cleveland, OH; Baton Rouge, LA; Lexington, KY; Columbia, SC; and Hato Rey, Puerto Rico. SCT currently has 1,100 employees engaged in systems operations activities. The bulk of this staff is engaged in four areas:

- Applications Design and Development 30%
- Project Management 25%
- User Support 25%
- Technical Support 20%

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8. Systems Operations Alliances

As discussed earlier, SCT has no formal alliance programs for systems operations. However, SCT has used DEC, Hewlett-Packard and Sequent as platforms for SCT software, and Sorbus for equipment maintenance.

INPUT believes that as SCT increases its systems operations activities, alliances with other companies will play a more important role.

9. Systems Operations Marketing Strategy

SCT expects to expand its systems operations business from both its existing client base as well as through new accounts. However, this latter thrust is expected to account for only 10% of new business. The balance will come from existing customers.

SCT expects to receive approximately 10% of its new systems operations business through formal solicitation. Sixty percent of new business, as expected by SCT, will come from direct sales activity. Additionally, SCT expects 30% of new business to come from new contracts with existing clients. This is consistent with its overall plans to expand the contracted work within its current client base.

SCT views itself as being a leading supplier of systems operations activities within its focused markets. The company expects this strategy of targeting two specific industries to give it a competitive edge when competing for systems operations contracts in these markets.

10. Systems Operations Customer Base

SCT currently has 29 education and local government clients for systems operations services. Among its listed clients are:

- Norwich University, Vermont
- University of Richmond, Virginia
- George Washington University, Washington, DC

As the systems operations market continues to evolve, SCT will enter additional vertical markets when it can leverage its current software product investment.

11. Summary and Future Directions

Over its 23 years of providing services to the educational sector and state and local governments, SCT has developed a leadership position, providing systems operations services based on tested applications software packages. INPUT expects SCT's systems operations business to grow slowly but steadily over the next few years, reflecting overall business conditions in the markets in which it participates.

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